



SEARCH NOTES
10/083, 283

STIC Search Report

Biotech-Chem Library

STIC Database Tracking Number: 140783

TO: Ray Henley
Location: REM-3A69/3C70
Art Unit: 1614
Monday, January 03, 2005

Case Serial Number: 10/083283

From: Barb O'Bryen
Location: Biotech-Chem Library
Remsen 1A69
Phone: 571-272-2518 *BOB*

barbara.obryen@uspto.gov

Search Notes

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140783

Access DB# _____

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: RAY HEWLEY Examiner #: 46553 Date: 12/20/2004
Art Unit: 1614 Phone Number: 20575 Serial Number: 10/083,283
Mail Box and Bldg/Room Location: _____ Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc., if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: CARBOXYFULLERENES + METHODS OF USE
Inventors (please provide full names): LAURA DUGAN; EVA LOVETT; KEVIN QUINN; and
JOSHUA HARDY

Earliest Priority Filing Date: 2/23/2002

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search for claim 1 subject matter

- ATTACHMENTS =
- 1) - CLAIMS (1 page)
 - 2) - Drawings Attached ~~to~~ to show 3D Structure (3 pages)
 - 3) - SPEC definition of "Lifespan" (1 page)
 - 4) - Bibliography Sheet (1 page)
 - 5) "Medical Subject Headings" synonyms for "fullerenes" etc.

Thanks

Ray
Hewley

STAFF USE ONLY

Type of Search

Vendors and cost where applicable

580

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STIC SEARCH RESULTS FEEDBACK FORM

Biotech-Chem Library

Questions about the scope or the results of the search? Contact *the searcher or contact*:

Mary Hale, Information Branch Supervisor
Remsen Bldg. 01 D86
571-272-2507

Voluntary Results Feedback Form

➤ I am an examiner in Workgroup: 1614 Example: 1610

➤ Relevant prior art **found**, search results used as follows:

- ☒ 102 rejection
- ☒ 103 rejection
- ☒ Cited as being of interest.
- ☒ Helped examiner better understand the invention.
- ☒ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☒ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Thanks!!

Drop off or send completed forms to STIC-Biotech-Chem Library Remsen Bldg.



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=> fil reg; d ide l6

FILE 'REGISTRY' ENTERED AT 16:37:12 ON 03 JAN 2005

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Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 2 JAN 2005 HIGHEST RN 807298-39-1

DICTIONARY FILE UPDATES: 2 JAN 2005 HIGHEST RN 807298-39-1

TSCA INFORMATION NOW CURRENT THROUGH MAY 21, 2004

Please note that search-term pricing does apply when conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more information enter HELP PROP at an arrow prompt in the file or refer to the file summary sheet on the web at:

<http://www.cas.org/ONLINE/DBSS/registryss.html>

L6 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2005 ACS on STN

RN ~~99685-196-8~~ REGISTRY

CN [5,6]Fullerene-C60-Ih (9CI) (CA INDEX NAME)

OTHER NAMES:

CN Buckminsterfullerene

CN Buckminsterfullerene (C60)

CN Buckyball

CN ~~C60 Fullerene~~

CN Carbon (C60)

CN Carbon (C60) fullerene

CN Carbon (C60) mol.

CN Carbon cluster (C60)

CN Carbon, mol. (C60)

CN Follene-60

CN Footballene

CN Footballene (C60)

CN Fullerene

CN Fullerene C60 cluster

CN Fullerene-60

CN Fullerene-C60

CN Icosahedral C60

CN Soccerballene

CN [5,6]Fullerene C60

CN [60]Fullerene

MF C60

CI COM

SR CA

LC STN Files: AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, CA, CANCERLIT, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CIN, CSCHM, DDFU, DETHERM*, DRUGU, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, IPA, MEDLINE, MRCK*, PIRA, PROMT, TOXCENTER, TULSA, USPAT2, USPATFULL, VTB

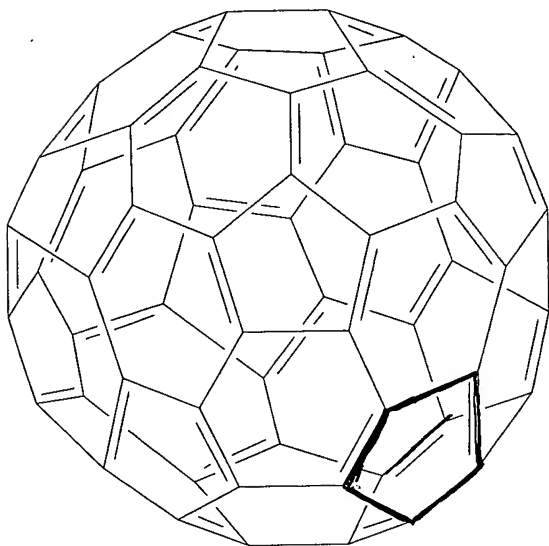
(*File contains numerically searchable property data)

DT.CA Caplus document type: Book; Conference; Dissertation; Journal; Patent; Preprint; Report

RL.P Roles from patents: ANST (Analytical study); BIOL (Biological study);

*fullerenes are
too large to
search structurally,
so I did dictionary
searching in Registry*

FORM (Formation, nonpreparative); PREP (Preparation); PROC (Process);
 PRP (Properties); RACT (Reactant or reagent); USES (Uses)
 RLD.P Roles for non-specific derivatives from patents: ANST (Analytical
 study); BIOL (Biological study); FORM (Formation, nonpreparative); PREP
 (Preparation); PROC (Process); PRP (Properties); RACT (Reactant or
 reagent); USES (Uses)
 RL.NP Roles from non-patents: ANST (Analytical study); BIOL (Biological
 study); CMBI (Combinatorial study); FORM (Formation, nonpreparative);
 MSC (Miscellaneous); OCCU (Occurrence); PREP (Preparation); PROC
 (Process); PRP (Properties); RACT (Reactant or reagent); USES (Uses)
 RLD.NP Roles for non-specific derivatives from non-patents: ANST (Analytical
 study); BIOL (Biological study); FORM (Formation, nonpreparative); MSC
 (Miscellaneous); OCCU (Occurrence); PREP (Preparation); PROC (Process);
 PRP (Properties); RACT (Reactant or reagent); USES (Uses)



"L"
STN Guide

(L)

SCS - (L) (THU or PKT or PAC
or DMA) / RL

SCS and Pharmac? / SC, ST
Fullerene? / CT (L) /
PD or AD
TH or
PK

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

15352 REFERENCES IN FILE CA (1907 TO DATE)
 1631 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
 15377 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> d que 124

L18	17681	SEA FILE=REGISTRY	ABB=ON	C60
L20	1215	SEA FILE=REGISTRY	ABB=ON	FULLERENE AND CARBOXYLIC ACID
L22	1114	SEA FILE=REGISTRY	ABB=ON	L20 AND L18
L24	883	SEA FILE=REGISTRY	ABB=ON	L22 AND 3/SZS

=> => d que 169

L69 977 SEA FILE=REGISTRY ABB=ON FULLERENE AND ESTER AND 3/SZS

=> => fil capl; d que 171; d que 138; d que 162

FILE CAPLUS, ENTERED AT 16:42:27 ON 03 JAN 2005

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FILE COVERS 1907 - 3 Jan 2005 VOL 142 ISS 2
 FILE LAST UPDATED: 31 Dec 2004 (20041231/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

'OBI' IS DEFAULT SEARCH FIELD FOR 'CAPLUS' FILE

L35 10833 SEA FILE=CAPLUS ABB=ON (LONGEVITY OR LIFESPAN#)/BI
 L36 17744 SEA FILE=CAPLUS ABB=ON (LIFE(1A) (SPAN# OR LENGTH? OR EXPECTAN?
 OR EXTEN?))/BI
 L37 401 SEA FILE=CAPLUS ABB=ON (BIRTH(1W)DEATH)/BI
 L69 977 SEA FILE=REGISTRY ABB=ON FULLERENE AND ESTER AND 3/SZS
 L70 634 SEA FILE=CAPLUS ABB=ON L69
~~L71 2 SEA FILE=CAPLUS ABB=ON L70 AND (L35 OR L36 OR L37)~~

L6 1 SEA FILE=REGISTRY ABB=ON 99685-96-8
 L18 17681 SEA FILE=REGISTRY ABB=ON C60
 L20 1215 SEA FILE=REGISTRY ABB=ON FULLERENE AND CARBOXYLIC ACID
 L22 1114 SEA FILE=REGISTRY ABB=ON L20 AND L18
 L24 883 SEA FILE=REGISTRY ABB=ON L22 AND 3/SZS
 L31 1632 SEA FILE=CAPLUS ABB=ON L6/D
 L32 14 SEA FILE=CAPLUS ABB=ON L31 (L) CARBOXY?/OBI
 L33 28 SEA FILE=CAPLUS ABB=ON (CARBOXYFULLERENE#)/BI
 L34 493 SEA FILE=CAPLUS ABB=ON L24
 L35 10833 SEA FILE=CAPLUS ABB=ON (LONGEVITY OR LIFESPAN#)/BI
 L36 17744 SEA FILE=CAPLUS ABB=ON (LIFE(1A) (SPAN# OR LENGTH? OR EXPECTAN?
 OR EXTEN?))/BI
 L37 401 SEA FILE=CAPLUS ABB=ON (BIRTH(1W)DEATH)/BI
~~L38 2 SEA FILE=CAPLUS ABB=ON (L32 OR L33 OR L34) AND (L35 OR L36 OR
 L37)~~

L6 1 SEA FILE=REGISTRY ABB=ON 99685-96-8
 L31 1632 SEA FILE=CAPLUS ABB=ON L6/D
 L35 10833 SEA FILE=CAPLUS ABB=ON (LONGEVITY OR LIFESPAN#)/BI
 L36 17744 SEA FILE=CAPLUS ABB=ON (LIFE(1A) (SPAN# OR LENGTH? OR EXPECTAN?
 OR EXTEN?))/BI
 L37 401 SEA FILE=CAPLUS ABB=ON (BIRTH(1W)DEATH)/BI
 L60 16 SEA FILE=CAPLUS ABB=ON L31 (L) ESTER?/OBI
 L61 155 SEA FILE=CAPLUS ABB=ON ((FULLERENE#/OBI OR BUCKMINSTERFULLEREN
 E/OBI) (L) ESTER?/OBI)
~~L62 0 SEA FILE=CAPLUS ABB=ON (L60 OR L61) AND ((L35 OR L36 OR L37))~~

=> s 171 or 138

~~L80~~ ~~2~~ ~~L71~~ OR ~~L38~~

=> fil uspatf; d que 147; d que 159; d que 174

FILE=USPATFULL ENTERED AT 16:42:45 ON 03 JAN 2005

CA INDEXING COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

FILE COVERS 1971 TO PATENT PUBLICATION DATE: 30 Dec 2004 (20041230/PD)

FILE LAST UPDATED: 30 Dec 2004 (20041230/ED)

HIGHEST GRANTED PATENT NUMBER: US6836898

HIGHEST APPLICATION PUBLICATION NUMBER: US2004268457

CA INDEXING IS CURRENT THROUGH 30 Dec 2004 (20041230/UPCA)

ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 30 Dec 2004 (20041230/PD)

REVISED CLASS FIELDS (/NCL) LAST RELOADED: Oct 2004

USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Oct 2004

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>>> USPAT2 is now available.  USPATFULL contains full text of the  <<<
>>> original, i.e., the earliest published granted patents or  <<<
>>> applications.  USPAT2 contains full text of the latest US  <<<
>>> publications, starting in 2001, for the inventions covered in  <<<
>>> USPATFULL.  A USPATFULL record contains not only the original  <<<
>>> published document but also a list of any subsequent  <<<
>>> publications.  The publication number, patent kind code, and  <<<
>>> publication date for all the US publications for an invention  <<<
>>> are displayed in the PI (Patent Information) field of USPATFULL  <<<
>>> records and may be searched in standard search fields, e.g., /PN,  <<<
>>> /PK, etc.  <<<
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>>> USPATFULL and USPAT2 can be accessed and searched together  <<<
>>> through the new cluster USPATALL.  Type FILE USPATALL to  <<<
>>> enter this cluster.  <<<
>>>  <<<
>>> Use USPATALL when searching terms such as patent assignees,  <<<
>>> classifications, or claims, that may potentially change from  <<<
>>> the earliest to the latest publication.  <<<
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This file contains CAS Registry Numbers for easy and accurate substance identification.

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L6          1 SEA FILE=REGISTRY ABB=ON 99685-96-8
L18         17681 SEA FILE=REGISTRY ABB=ON C60
L20         1215 SEA FILE=REGISTRY ABB=ON FULLERENE AND CARBOXYLIC ACID
L22         1114 SEA FILE=REGISTRY ABB=ON L20 AND L18
L24         883 SEA FILE=REGISTRY ABB=ON L22 AND 3/SZS
L28         49 SEA FILE=REGISTRY ABB=ON L24 AND USPATFULL/LC
L39         19 SEA FILE=USPATFULL ABB=ON L28
L40         2 SEA FILE=USPATFULL ABB=ON L6 (L) CARBOXY?/IT
L41         10 SEA FILE=USPATFULL ABB=ON CARBOXYFULLERENE# OR CARBOXY(A) FULLE
RENE#
L42         1 SEA FILE=USPATFULL ABB=ON (CARBOXYFULLERENE# OR CARBOXY(A) FULL
ERENE#)/IT
L43         23268 SEA FILE=USPATFULL ABB=ON (LONGEVITY OR LIFESPAN#) OR
(LONGEVITY OR LIFESPAN#)/IT
L44         53081 SEA FILE=USPATFULL ABB=ON (LIFE(1A) (SPAN# OR LENGTH? OR
EXPECTAN? OR EXTEN?))
L45         239 SEA FILE=USPATFULL ABB=ON (LIFE(1A) (SPAN# OR LENGTH? OR
EXPECTAN? OR EXTEN?)) /IT
L46         258 SEA FILE=USPATFULL ABB=ON (BIRTH(1W)DEATH) OR (BIRTH(1W)DEATH)
/IT
```

~~L47~~ 6 SEA FILE=USPATFULL ABB=ON (L39 OR L40 OR L41 OR L42) AND (L43 OR L44 OR L45 OR L46)

L6 1 SEA FILE=REGISTRY ABB=ON 99685-96-8
L43 23268 SEA FILE=USPATFULL ABB=ON (LONGEVITY OR LIFESPAN#) OR
(LONGEVITY OR LIFESPAN#)/IT
L44 53081 SEA FILE=USPATFULL ABB=ON (LIFE(1A) (SPAN# OR LENGTH? OR
EXPECTAN? OR EXTEN?))
L45 239 SEA FILE=USPATFULL ABB=ON (LIFE(1A) (SPAN# OR LENGTH? OR
EXPECTAN? OR EXTEN?)) /IT
L46 258 SEA FILE=USPATFULL ABB=ON (BIRTH(1W)DEATH) OR (BIRTH(1W)DEATH)
/IT
L56 4 SEA FILE=USPATFULL ABB=ON L6 (L) ESTER? /IT
L57 32 SEA FILE=USPATFULL ABB=ON ((FULLERENE# OR BUCKMINSTERFULLERENE
) (5A) ESTER?)
L58 10 SEA FILE=USPATFULL ABB=ON ((FULLERENE# OR BUCKMINSTERFULLERENE
) (L) ESTER?) /IT
~~L59~~ 3 SEA FILE=USPATFULL ABB=ON (L56 OR L57 OR L58) AND (L43 OR L44 OR
L45 OR L46)

L43 23268 SEA FILE=USPATFULL ABB=ON (LONGEVITY OR LIFESPAN#) OR
(LONGEVITY OR LIFESPAN#) /IT
L44 53081 SEA FILE=USPATFULL ABB=ON (LIFE(1A) (SPAN# OR LENGTH? OR
EXPECTAN? OR EXTEN?))
L45 239 SEA FILE=USPATFULL ABB=ON (LIFE(1A) (SPAN# OR LENGTH? OR
EXPECTAN? OR EXTEN?)) /IT
L46 258 SEA FILE=USPATFULL ABB=ON (BIRTH(1W)DEATH) OR (BIRTH(1W)DEATH)
/IT
L69 977 SEA FILE=REGISTRY ABB=ON FULLERENE AND ESTER AND 3/SZS
L72 18 SEA FILE=USPATFULL ABB=ON L69
~~L74~~ 2 SEA FILE=USPATFULL ABB=ON L72 AND (L43 OR L44 OR L45 OR L46)

=> s l47 or l74 or l59

~~L81~~ 6 L47 OR L74 OR L59

=> fil toxcenter; d que l55; d que l76; s l55 or l76
'FILE TOXCENTER' ENTERED AT 16:43:05 ON 03 JAN 2005
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FILE COVERS 1907 TO 29 Dec 2004 (20041229/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

TOXCENTER has been enhanced with new files segments and search fields.
See HELP CONTENT for more information.

TOXCENTER thesauri in the /CN, /CT, and /MN fields incorporate the MeSH 2005 vocabulary. See <http://www.nlm.nih.gov/mesh/> and http://www.nlm.nih.gov/pubs/techbull/nd03/nd03_mesh.html for a description of changes.

L18 17681 SEA FILE=REGISTRY ABB=ON C60
L20 1215 SEA FILE=REGISTRY ABB=ON FULLERENE AND CARBOXYLIC ACID
L22 1114 SEA FILE=REGISTRY ABB=ON L20 AND L18

L24 883 SEA FILE=REGISTRY ABB=ON L22 AND 3/SZS
 L29 59 SEA FILE=REGISTRY ABB=ON L24 AND TOXCENTER/LC
 L48 53 SEA FILE=TOXCENTER ABB=ON L29 OR CARBOXYFULLERENE# OR
 CARBOXY(A) FULLERENE#
 L49 1 SEA FILE=TOXCENTER ABB=ON BUCKMINSTERFULLERENE (5A) CARBOXY?
 L50 4 SEA FILE=TOXCENTER ABB=ON BUCKYBALL#
 L51 6424 SEA FILE=TOXCENTER ABB=ON (LONGEVITY OR LIFESPAN#) OR
 (BIRTH(1W) DEATH)
 L52 11084 SEA FILE=TOXCENTER ABB=ON (LIFE(1A) (SPAN# OR LENGTH? OR
 EXPECTAN? OR EXTEN?))
 L54 6 SEA FILE=TOXCENTER ABB=ON (FULLERENE# OR BUCKMINSTERFULLERENE)
 (5A) ESTER?
~~L55 1 SEA FILE=TOXCENTER ABB=ON ((L48 OR L49 OR L50) OR L54) AND~~
~~(L51 OR L52)~~

L51 6424 SEA FILE=TOXCENTER ABB=ON (LONGEVITY OR LIFESPAN#) OR
 (BIRTH(1W) DEATH)
 L52 11084 SEA FILE=TOXCENTER ABB=ON (LIFE(1A) (SPAN# OR LENGTH? OR
 EXPECTAN? OR EXTEN?))
 L69 977 SEA FILE=REGISTRY ABB=ON FULLERENE AND ESTER AND 3/SZS
 L75 22 SEA FILE=TOXCENTER ABB=ON L69
~~L76 1 SEA FILE=TOXCENTER ABB=ON (L51 OR L52) AND L75~~

~~L82 1 L55 OR L76~~ ?

=> fil cancer medl; d que l68

FILE 'CANCERLIT' ENTERED AT 16:43:11 ON 03 JAN 2005

~~FILE 'MEDLINE'~~ ENTERED AT 16:43:11 ON 03 JAN 2005

L18 17681 SEA FILE=REGISTRY ABB=ON C60
 L20 1215 SEA FILE=REGISTRY ABB=ON FULLERENE AND CARBOXYLIC ACID
 L22 1114 SEA FILE=REGISTRY ABB=ON L20 AND L18
 L24 883 SEA FILE=REGISTRY ABB=ON L22 AND 3/SZS
 L30 1 SEA FILE=REGISTRY ABB=ON L24 AND (CANCERLIT OR MEDLINE)/LC
 L64 3 SEA L30
 L65 472 SEA FULLERENES+NT/CT
 L66 7703 SEA LONGEVITY/CT
 L67 9486 SEA LIFE EXPECTANCY/CT
~~L68 2 SEA (L64 OR L65) AND (L66 OR L67)~~

=> d que l77

L69 977 SEA FILE=REGISTRY ABB=ON FULLERENE AND ESTER AND 3/SZS

~~L77 0 SEA L69~~

~~=> dup rem l80, l81, l82, l68~~

FILE 'CAPLUS' ENTERED AT 16:43:36 ON 03 JAN 2005

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FILE 'USPATFULL' ENTERED AT 16:43:36 ON 03 JAN 2005

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FILE 'TOXCENTER' ENTERED AT 16:43:36 ON 03 JAN 2005

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FILE 'MEDLINE' ENTERED AT 16:43:36 ON 03 JAN 2005

PROCESSING COMPLETED FOR L80

PROCESSING COMPLETED FOR L81

PROCESSING COMPLETED FOR L82

PROCESSING COMPLETED FOR L68

L83 ~~8-DUP-REM-L80-L81-L82-L68~~ (3 DUPLICATES REMOVED)

ANSWERS '1-2' FROM FILE CAPLUS

ANSWERS '3-6' FROM FILE USPATFULL

ANSWERS '7-8' FROM FILE MEDLINE

=> ~~d-ibib-ed-abs-hitstr-1-6;id-iall-7-8~~

L83 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 1

ACCESSION NUMBER: 2004:142814 CAPLUS

DOCUMENT NUMBER: 140:199113

TITLE: Preparation of therapeutic malonic acid/acetic acid buckminsterfullerenes as neuroprotective antioxidants

INVENTOR(S): Dugan, Laura L.; Lovett, Eva G.; Quick, Kevin L.; Hardt, Joshua I.

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 30 pp., Cont.-in-part of U.S. Ser. No. 83,283.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004034100	A1	20040219	US 2003-373425	20030224
US 2003162837	A1	20030828	US 2002-83283	20020223
WO 2004076349	A1	20040910	WO 2004-US5442	20040224
WO 2004076349	B1	20041104		
W:	AE, AE, AG, AL, AL, AM, AM, AM, AT, AT, AU, AZ, AZ, BA, BB, BG, BG, BR, BR, BW, BY, BY, BZ, BZ, CA, CH, CN, CN, CO, CO, CR, CR, CU, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EC, EC, EE, EE, EG, ES, ES, FI, FI, GB, GD, GE, GE, GH, GM, HR, HR, HU, HU, ID, IL, IN, IS, JP, JP, KE, KE, KG, KG, KP, KP, KR, KR, KZ, KZ, LC, LK, LR, LS, LS, LT, LU, LV, MA, MD, MD, MG, MK, MN, MW, MX, MX, MZ, MZ, NA, NI			
RW:	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

PRIORITY APPLN. INFO.:	US 2002-83283	A2 20020223
	US 2003-373425	A1 20030224

OTHER SOURCE(S): CASREACT 140:199113; MARPAT 140:199113

ED Entered STN: 22 Feb 2004

AB Title compds. with general formula C₆₀R₃ [I, wherein R = independently CR₁R₂; R₁, R₂ = independently H, CO₂H, CO₂Me; and pharmaceutically acceptable salts, esters or carriers thereof] were prepared as neuroprotective antioxidants. For example, reaction of C₆₀ and di-Me bromomalonate in toluene, followed by hydrolysis with sodium methoxide, gave I (R₁ = R₂ = CO₂H) in 89% yield. Administration of the latter to mice increased their lifespans by approx. 20% compared to controls, and I also showed neuroprotection vs. NMDA and AMPA toxicity. Thus, title compds. and their pharmaceutical compns. are useful for treating neuronal injury and for life-extension.

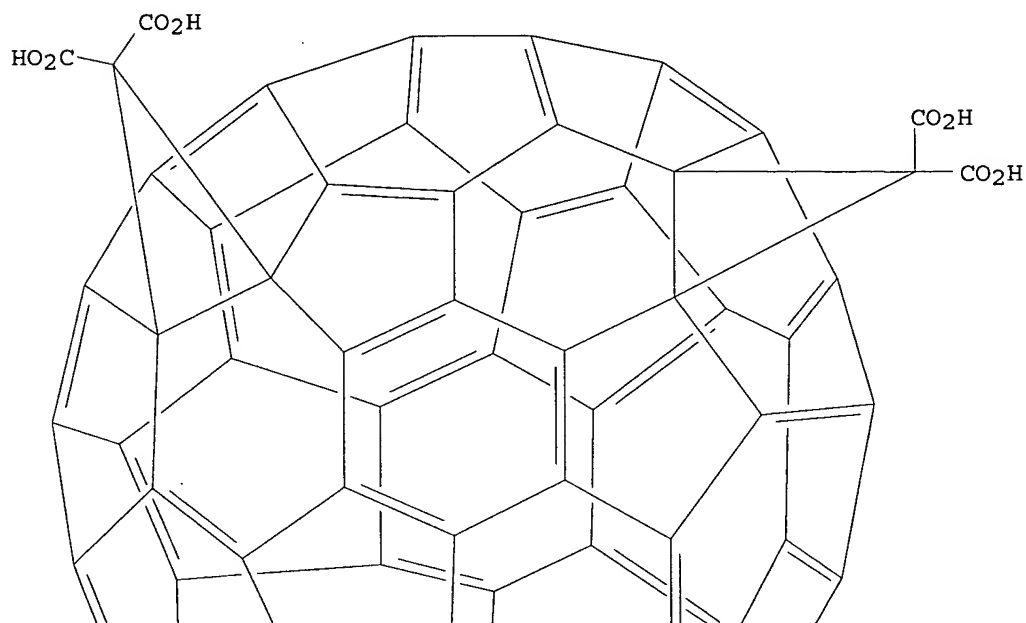
IT 159745-95-6P

RL: ADV (Adverse effect, including toxicity); PAC (Pharmacological activity); PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
 (preparation of therapeutic malonic acid/acetic acid buckminsterfullerenes as neuroprotective antioxidants)

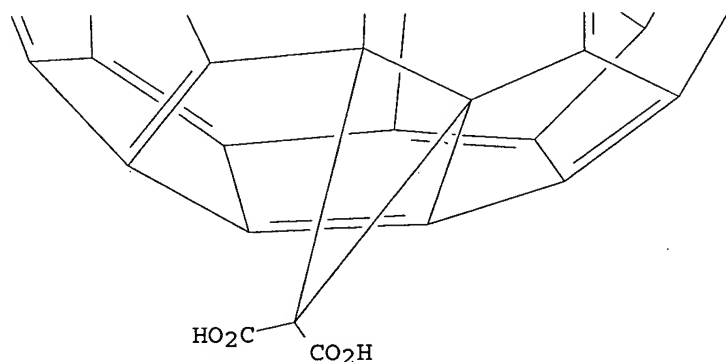
RN 159745-95-6 CAPLUS

CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-3',3',3'',3'',3''',3'''-hexacarboxylic acid (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



IT 660836-32-8P 660836-34-0P 660836-36-2P
 660836-38-4P

RL: PAC (Pharmacological activity); PKT (Pharmacokinetics); PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)

(preparation of therapeutic malonic acid/acetic acid buckminsterfullerenes
as neuroprotective antioxidants)

RN 660836-32-8 CAPLUS

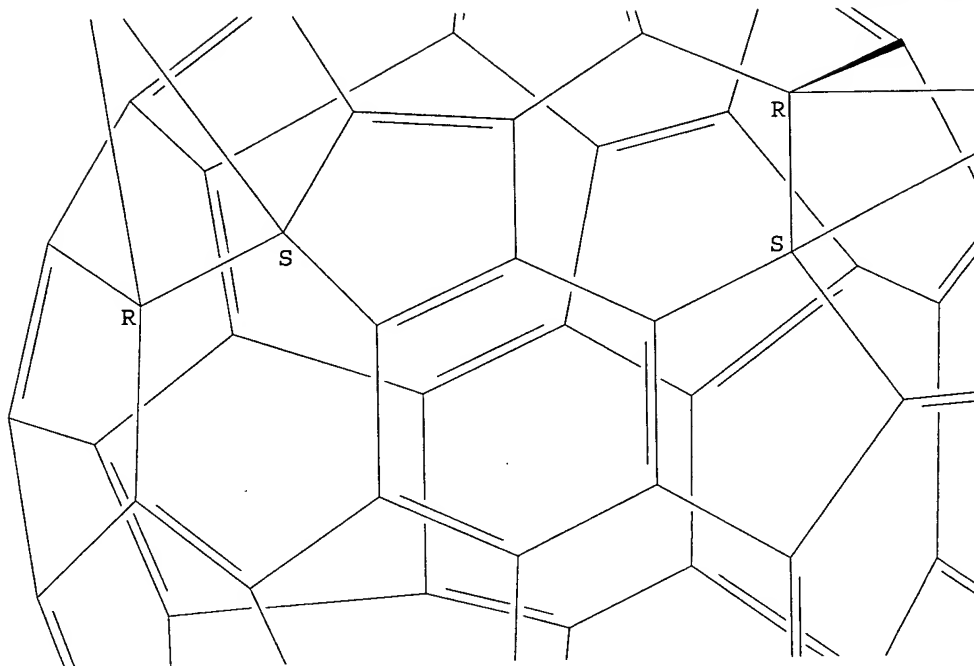
CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-
3',3'',3'''-tricarboxylic acid, (1R,3'S,3''S,3'''S,9S,16S,17R,21R,40S)-rel-
(9CI) (CA INDEX NAME)

Relative stereochemistry.

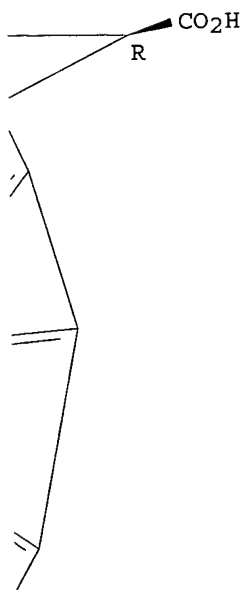
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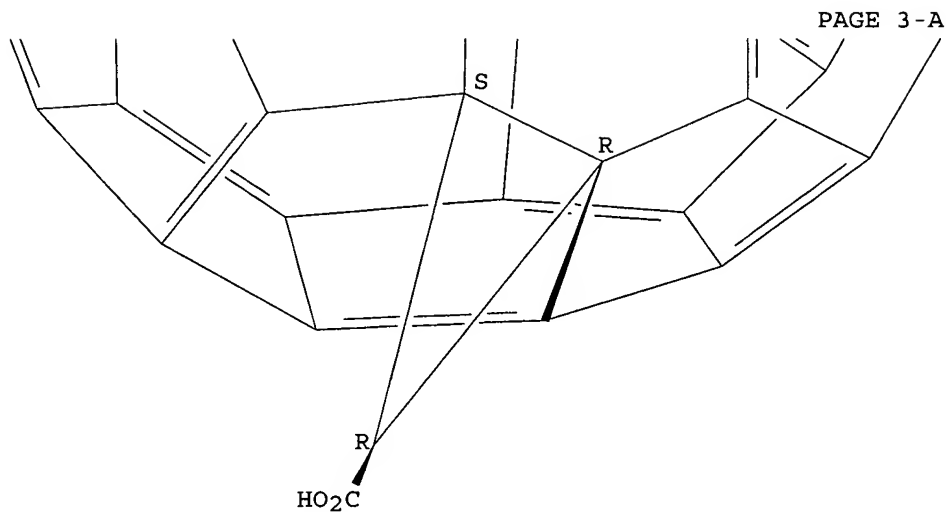


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RN 660836-34-0 CAPLUS

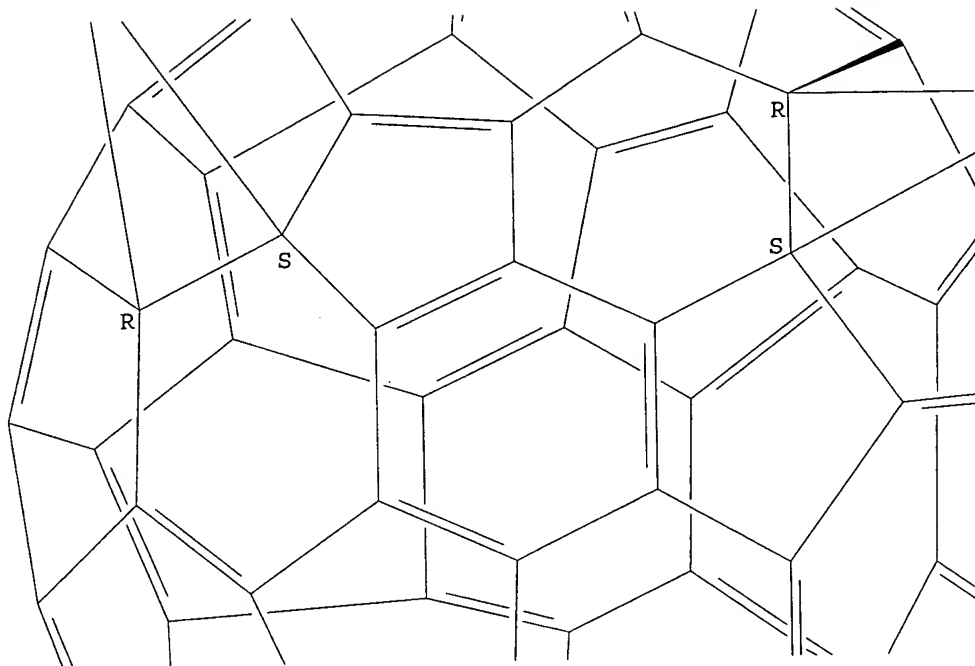
CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-1h-
3',3'',3'''-tricarboxylic acid, (1R,3'S,3''S,3'''R,9S,16S,17R,21R,40S)-rel-
(9CI) (CA INDEX NAME)

Relative stereochemistry.

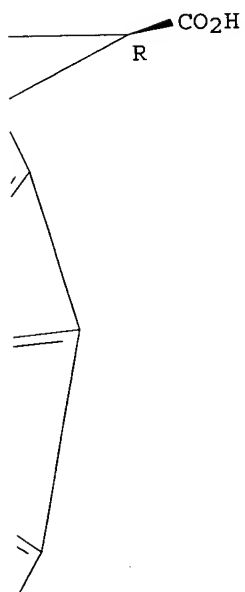
PAGE 1-A

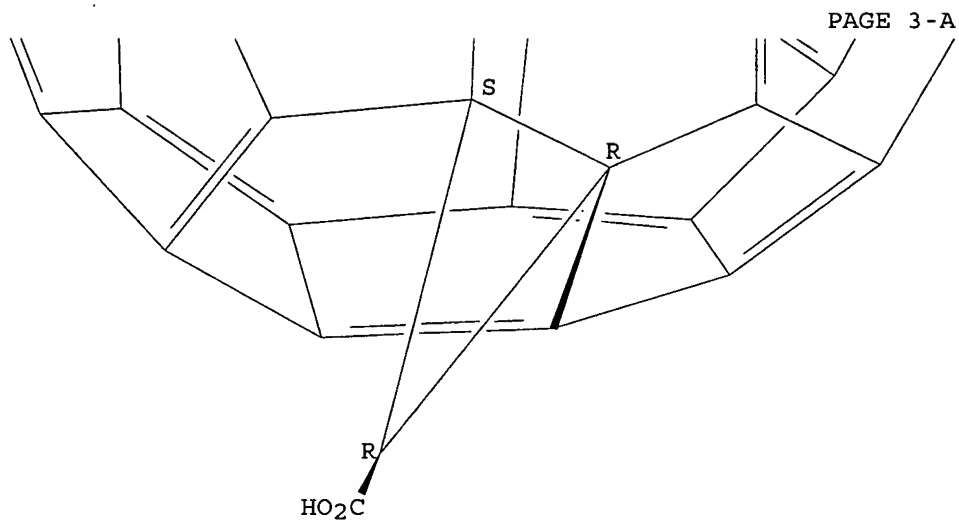


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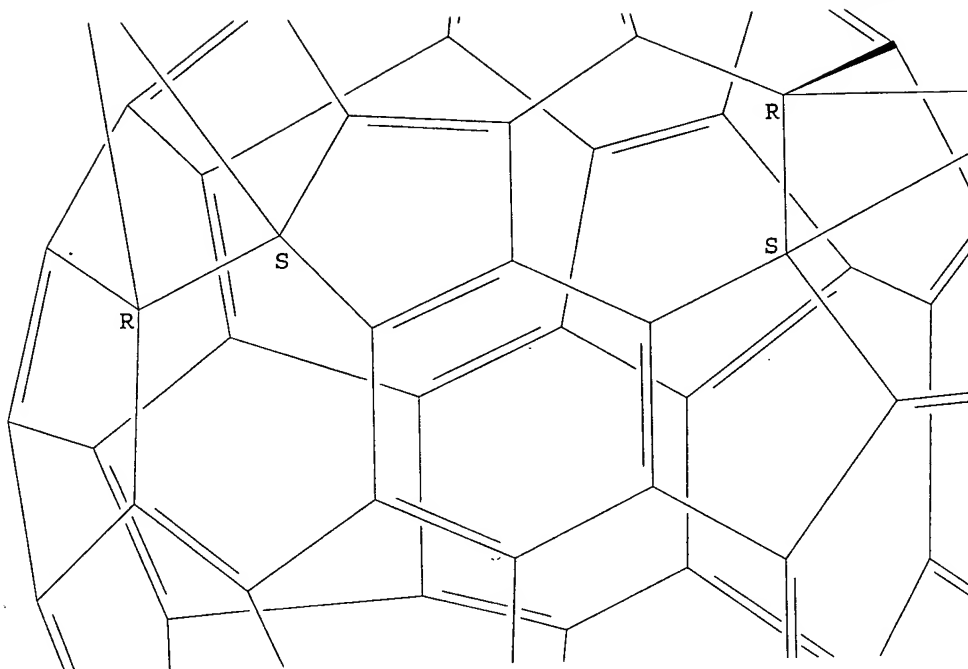
RN 660836-36-2 CAPLUS
CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-
3',3'',3'''-tricarboxylic acid, (1R,3'S,3''R,3'''R,9S,16S,17R,21R,40S)-rel-
(9CI) (CA INDEX NAME)

Relative stereochemistry.

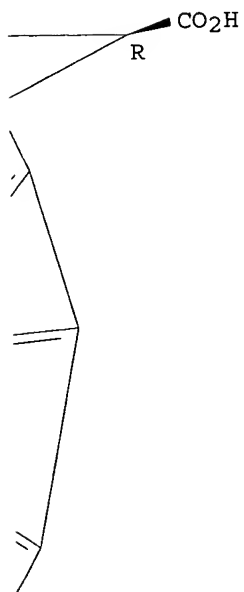
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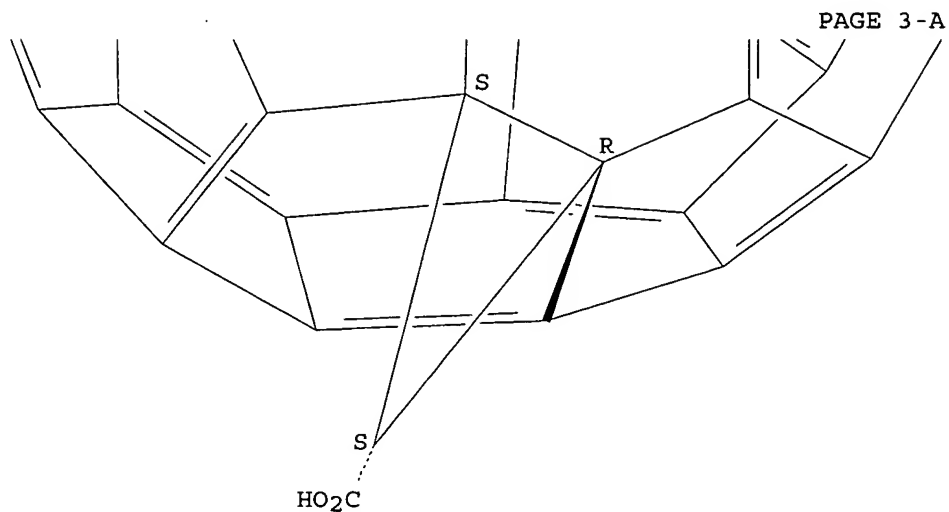


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RN 660836-38-4 CAPLUS

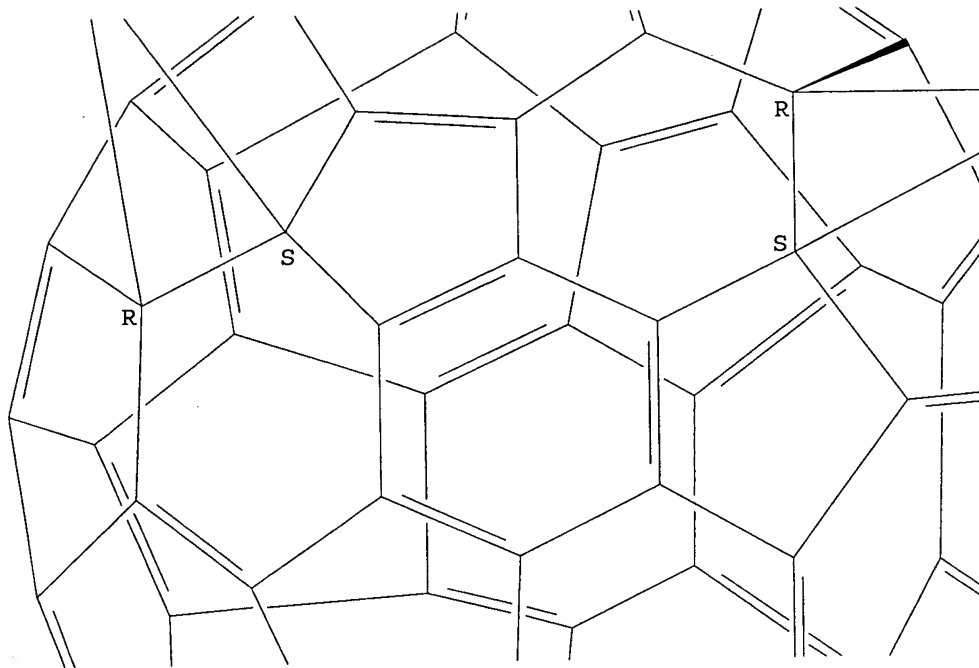
CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-
3',3'',3'''-tricarboxylic acid, (1R,3'R,3''R,3'''R,9S,16S,17R,21R,40S)-rel-
(9CI) (CA INDEX NAME)

Relative stereochemistry.

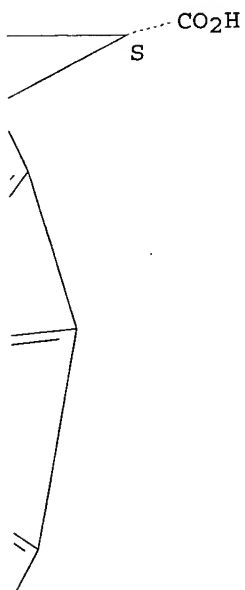
PAGE 1-A

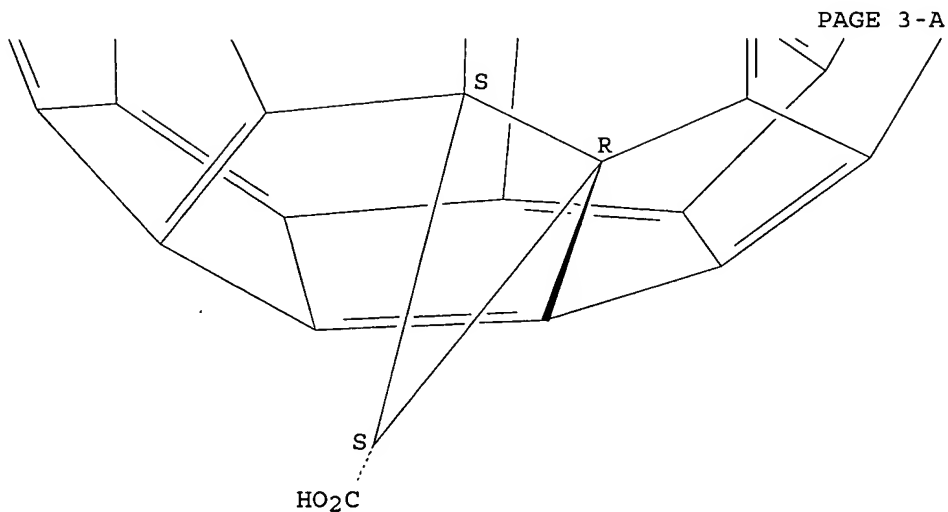


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IT 583027-48-9P 583027-49-0P 660836-24-8P
660836-25-9P 660836-27-1P 660836-29-3P

RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU
(Therapeutic use); BIOL (Biological study); PREP (Preparation); USES
(Uses)

(preparation of therapeutic malonic acid/acetic acid buckminsterfullerenes
as neuroprotective antioxidants)

RN 583027-48-9 CAPLUS

CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-
3',3',3'',3'',3'''-pentacarboxylic acid, (1R,3'''S,9S,16S,17R,21S,40R)-rel-
(9CI) (CA INDEX NAME)

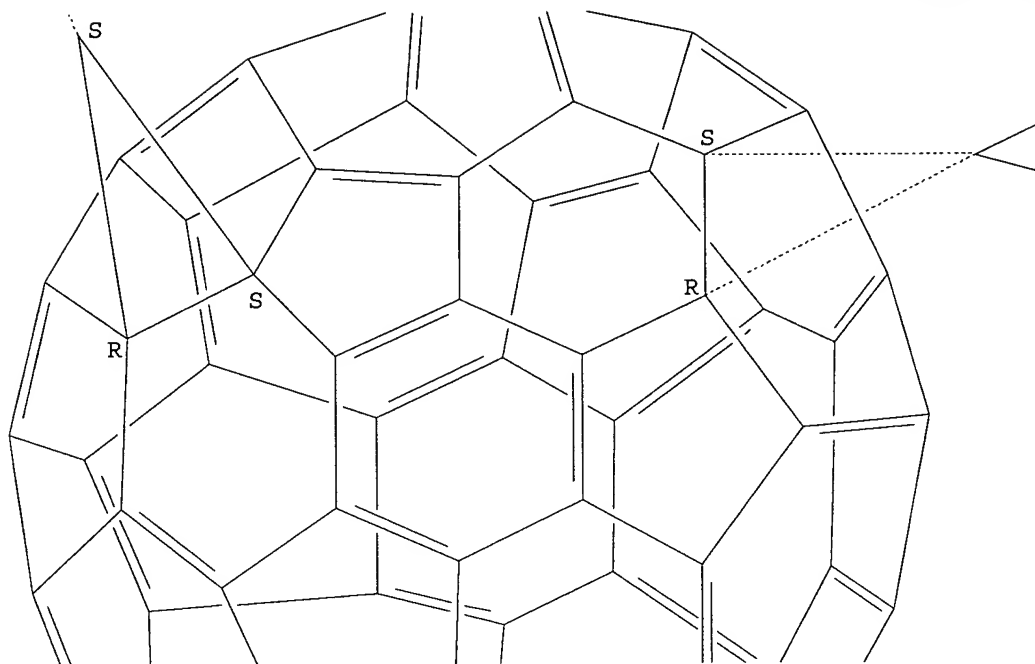
Relative stereochemistry.

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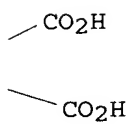
HO₂C



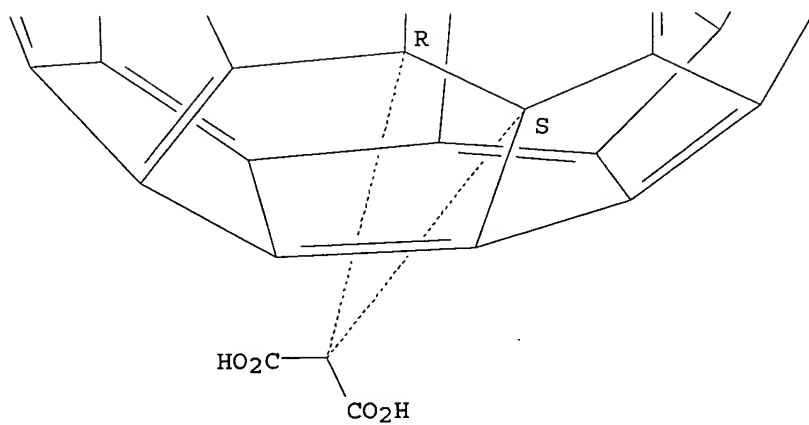
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RN 583027-49-0 CAPLUS

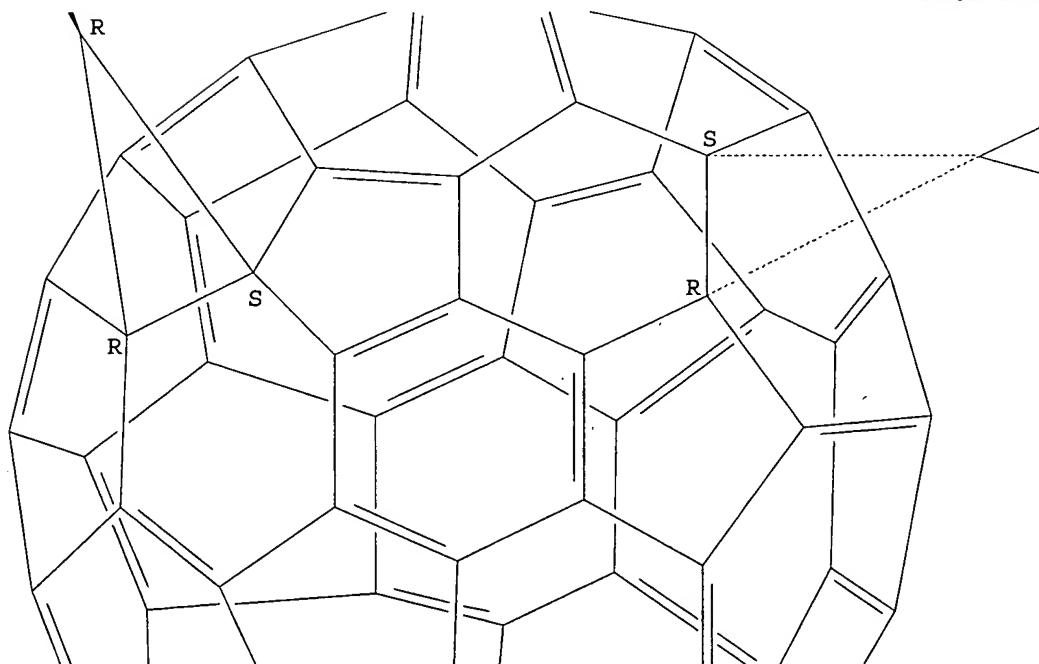
CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-
3',3'',3''',3''',3''''-pentacarboxylic acid, (1R,3'''R,9S,16S,17R,21S,40R)-rel-
(9CI) (CA INDEX NAME)

Relative stereochemistry.

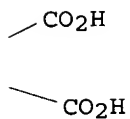
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HO₂C

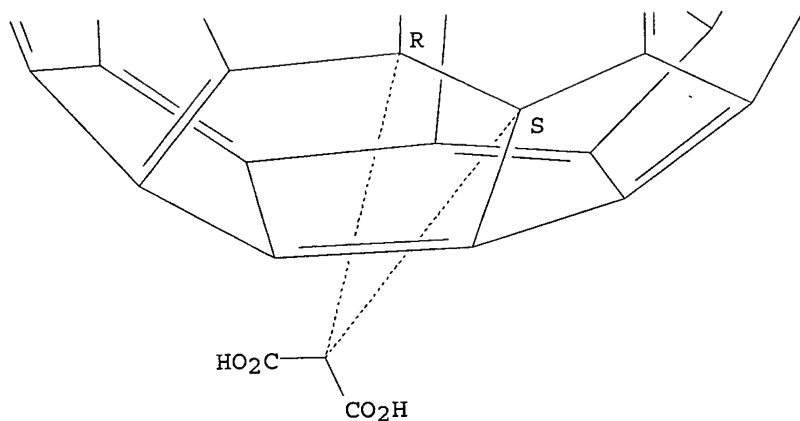
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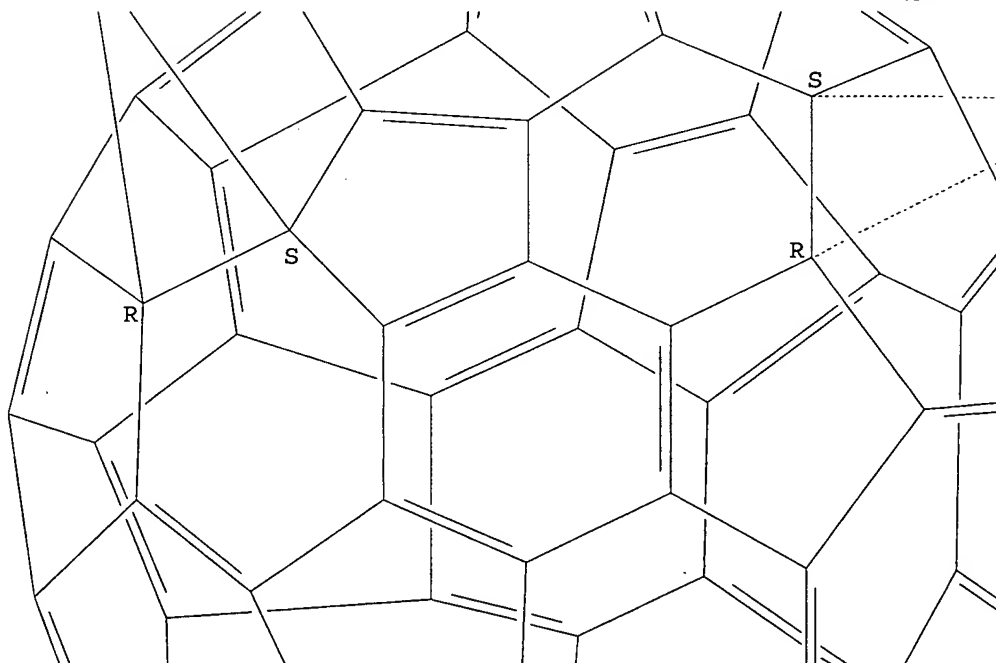
RN 660836-24-8 CAPLUS
 CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-1h-
 3',3',3'',3'''-tetracarboxylic acid, (1R,3''S,3'''S,9S,16R,17S,21S,40R)-
 rel- (9CI) (CA INDEX NAME)

Relative stereochemistry.

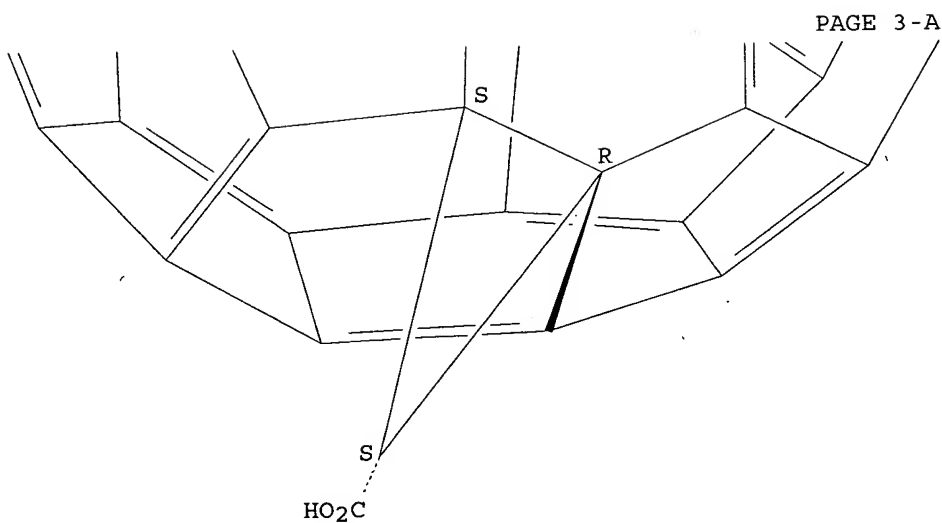
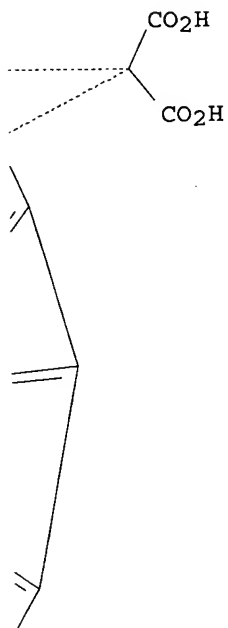
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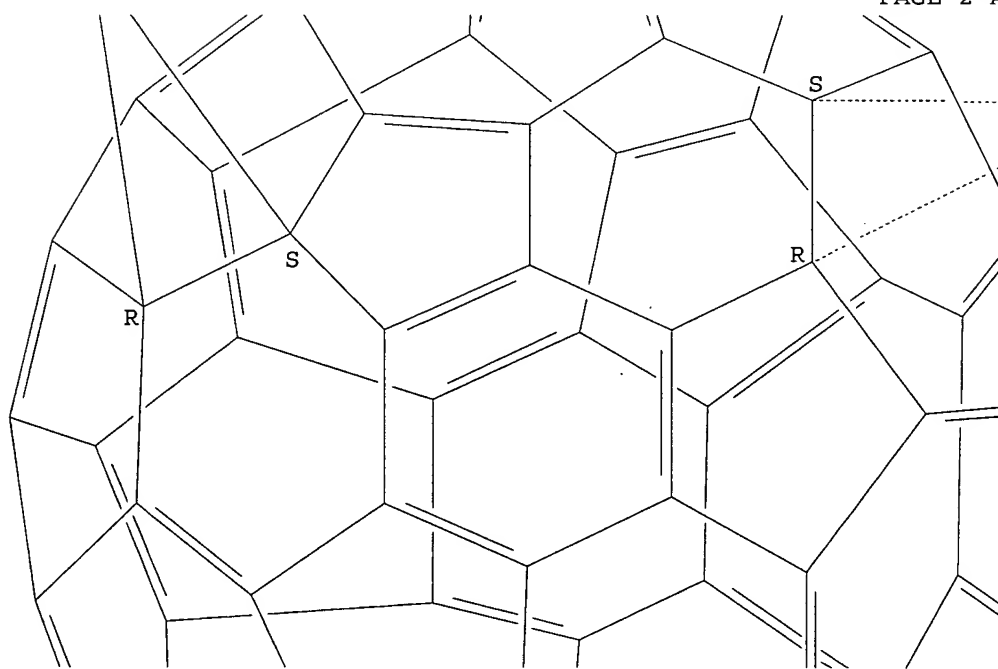
RN 660836-25-9 CAPLUS
CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-
3',3',3'',3'''-tetracarboxylic acid, (1R,3''S,3'''R,9S,16R,17S,21S,40R) -
rel- (9CI) (CA INDEX NAME)

Relative stereochemistry.

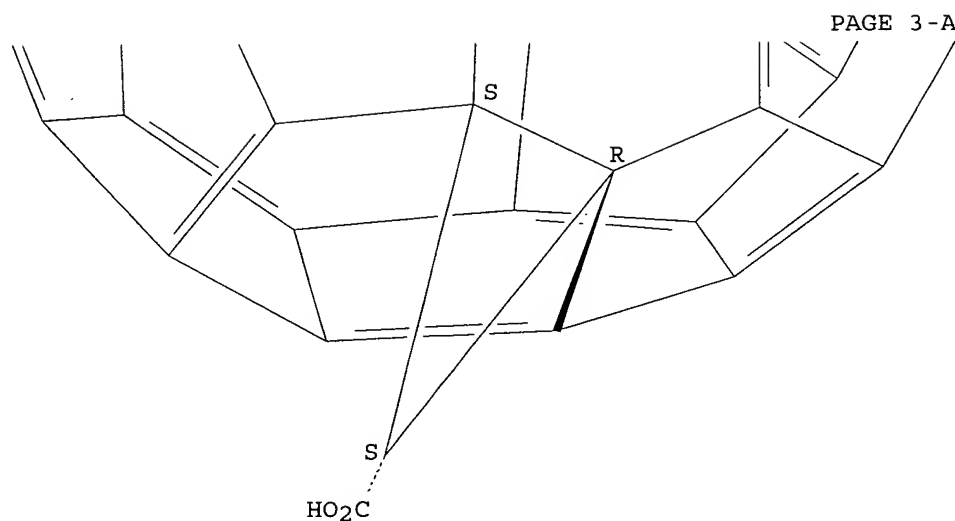
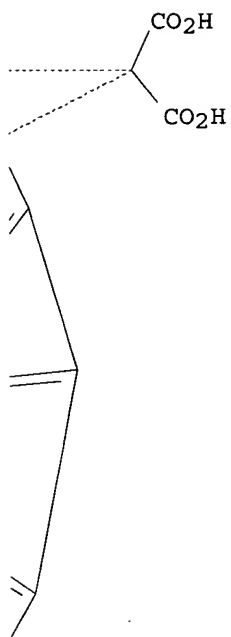
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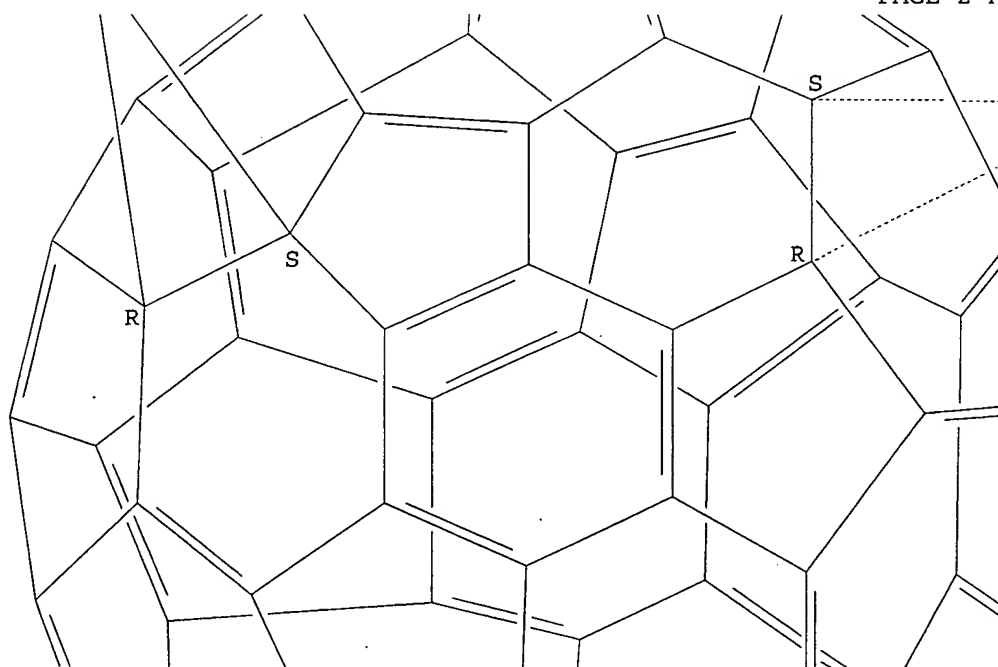
RN 660836-27-1 CAPLUS
 CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-1h-
 3',3',3'',3'''-tetracarboxylic acid, (1R,3'''R,3'''R,9S,16R,17S,21S,40R)-
 rel- (9CI) (CA INDEX NAME)

Relative stereochemistry.

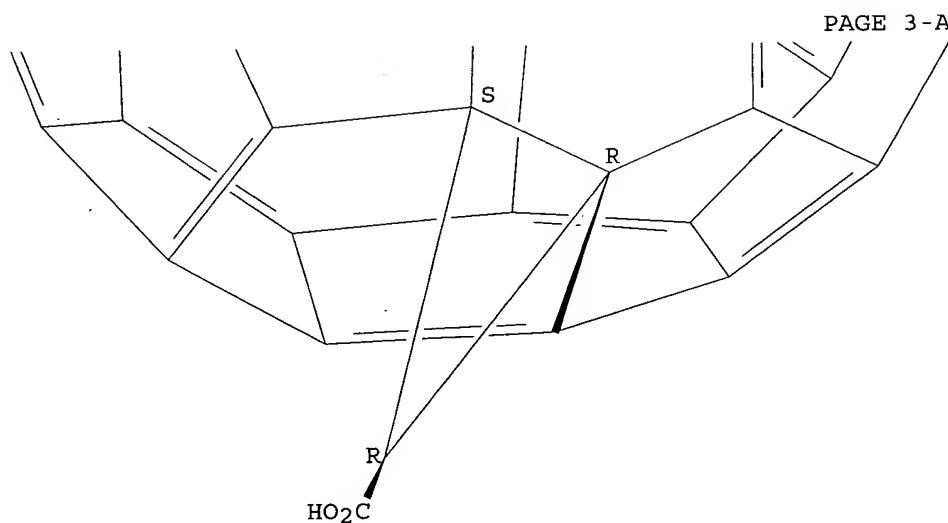
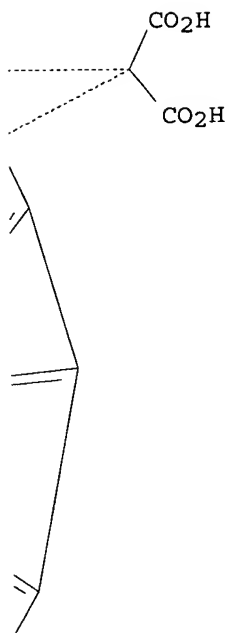
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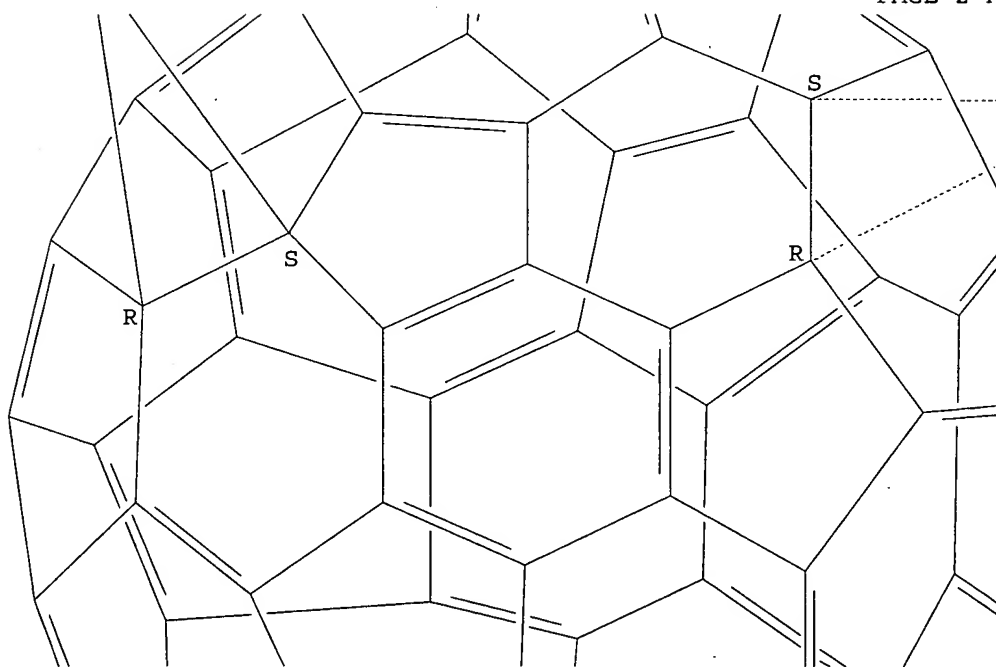
RN 660836-29-3 CAPLUS
CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-
3',3',3'',3'''-tetracarboxylic acid, (1R,3''R,3'''S,9S,16R,17S,21S,40R)-
rel- (9CI) (CA INDEX NAME)

Relative stereochemistry.

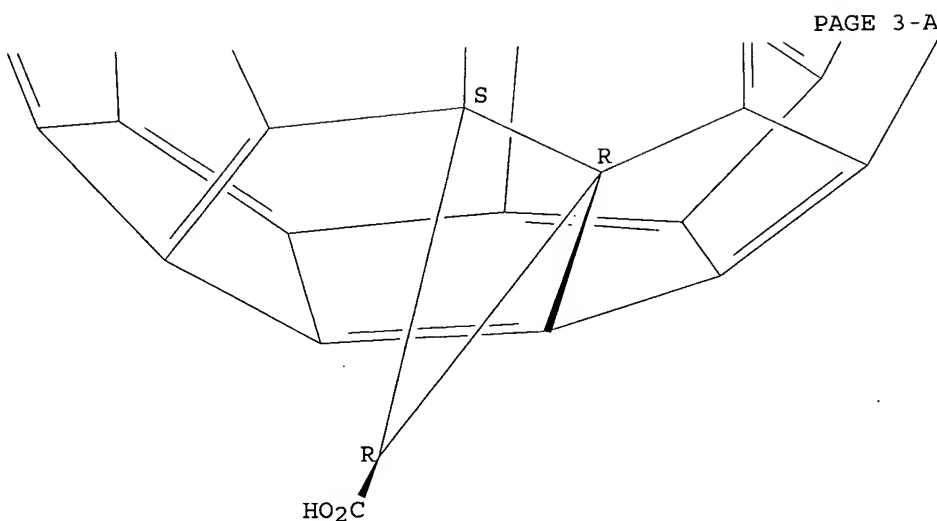
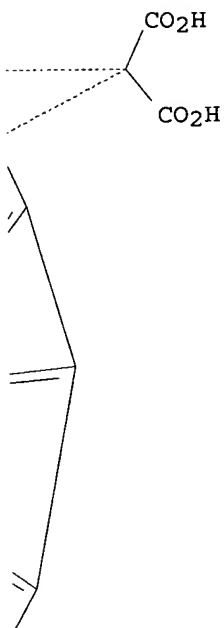
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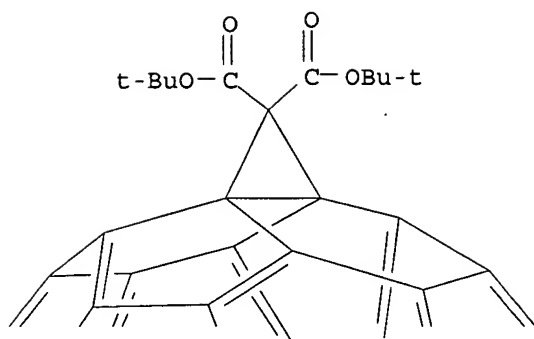
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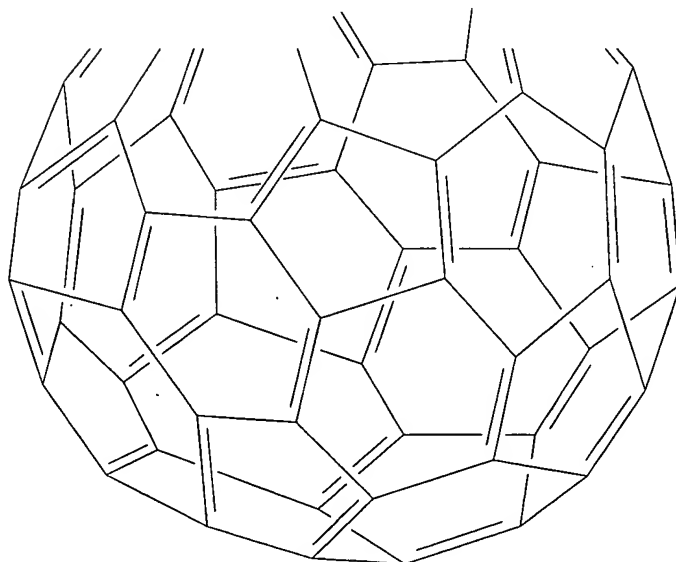
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IT 155679-96-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of therapeutic malonic acid/acetic acid buckminsterfullerenes
as neuroprotective antioxidants)
RN 155679-96-2 CAPLUS
CN 3'H-Cyclopropa[1,9][5,6]fullerene-C₆₀-1h-3',3'-dicarboxylic acid,
bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)

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IT 583027-50-3P 660836-40-8P 660836-42-0P
660836-45-3P 660836-49-7P 660836-53-3P
660836-56-6P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)

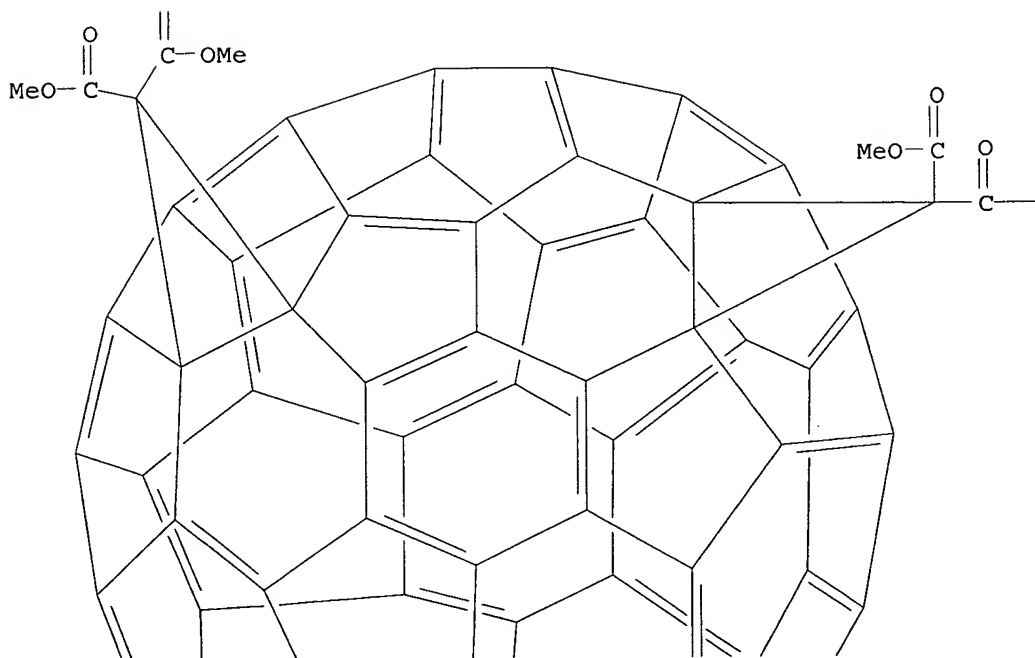
(preparation of therapeutic malonic acid/acetic acid buckminsterfullerenes
as neuroprotective antioxidants)

RN 583027-50-3 CAPLUS

CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-
3',3',3'',3'',3''',3'''-hexacarboxylic acid, hexamethyl ester (9CI) (CA
INDEX NAME)

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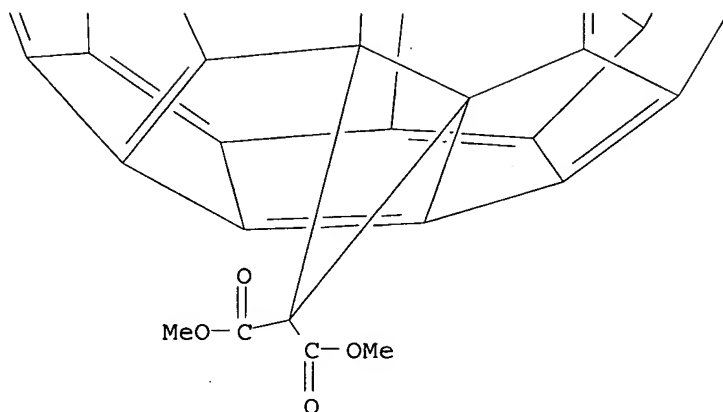
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— OMe

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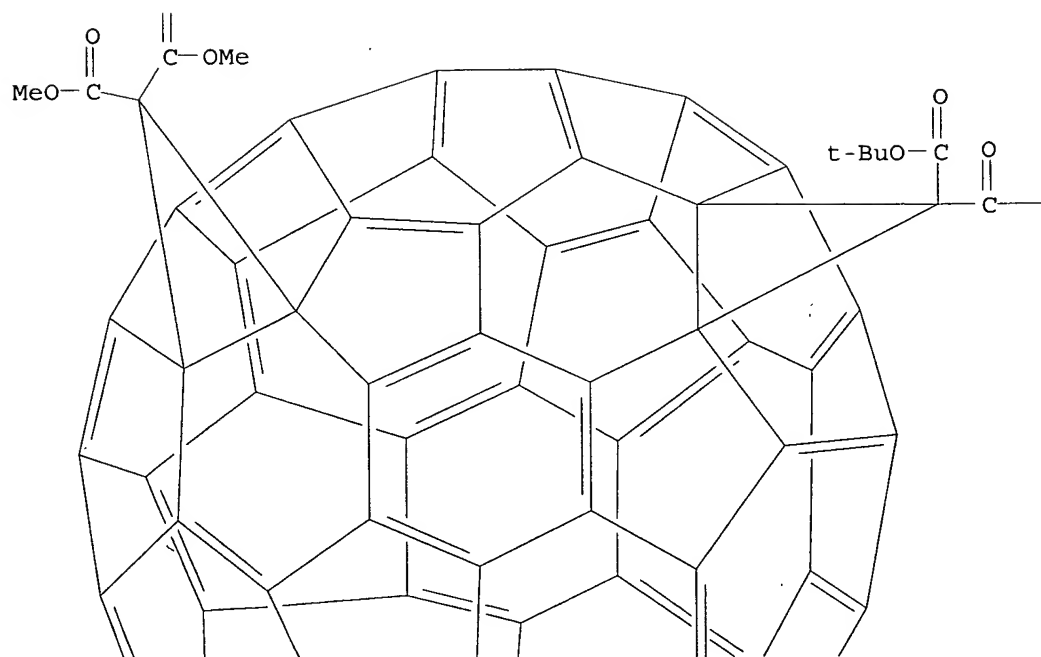
RN 660836-40-8 CAPLUS

CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-
3',3',3'',3'',3''',3'''-hexacarboxylic acid, 3',3'-bis(1,1-dimethylethyl)
3'',3'',3''',3'''-tetramethyl ester (9CI) (CA INDEX NAME)

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O

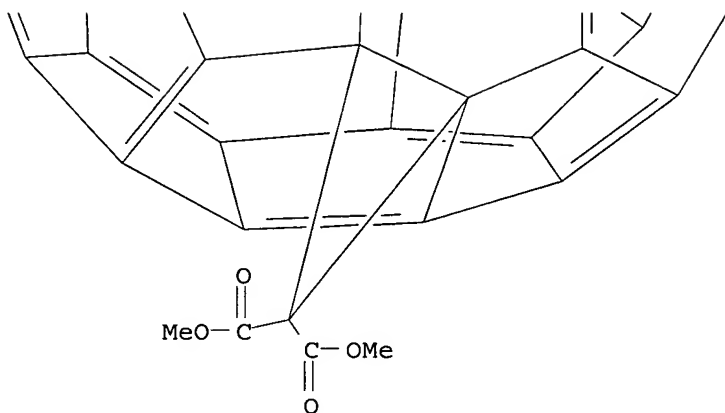
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— OBU-t

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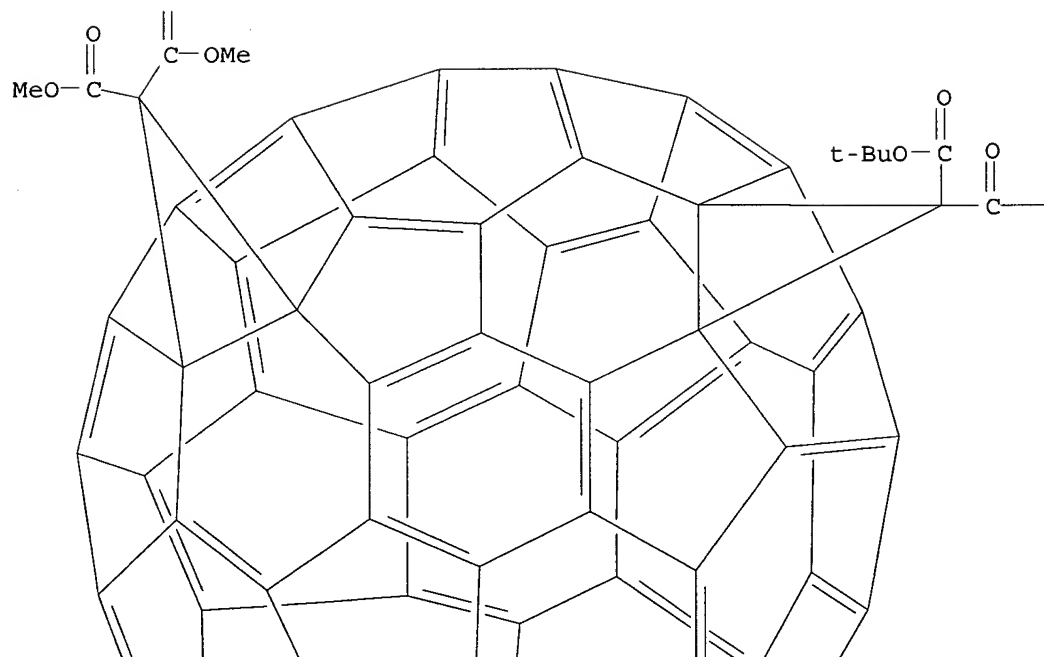


RN 660836-42-0 CAPLUS
CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-
3',3',3'',3'',3''',3'''-hexacarboxylic acid, 3',3',3'',3'''-tetrakis(1,1-
dimethylethyl) 3''',3'''-dimethyl ester (9CI) (CA INDEX NAME)

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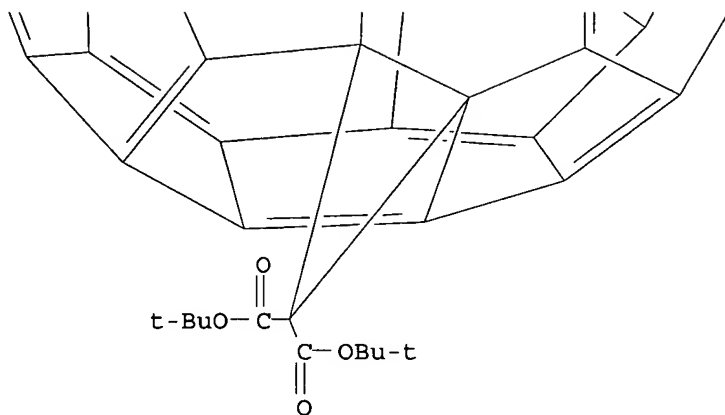
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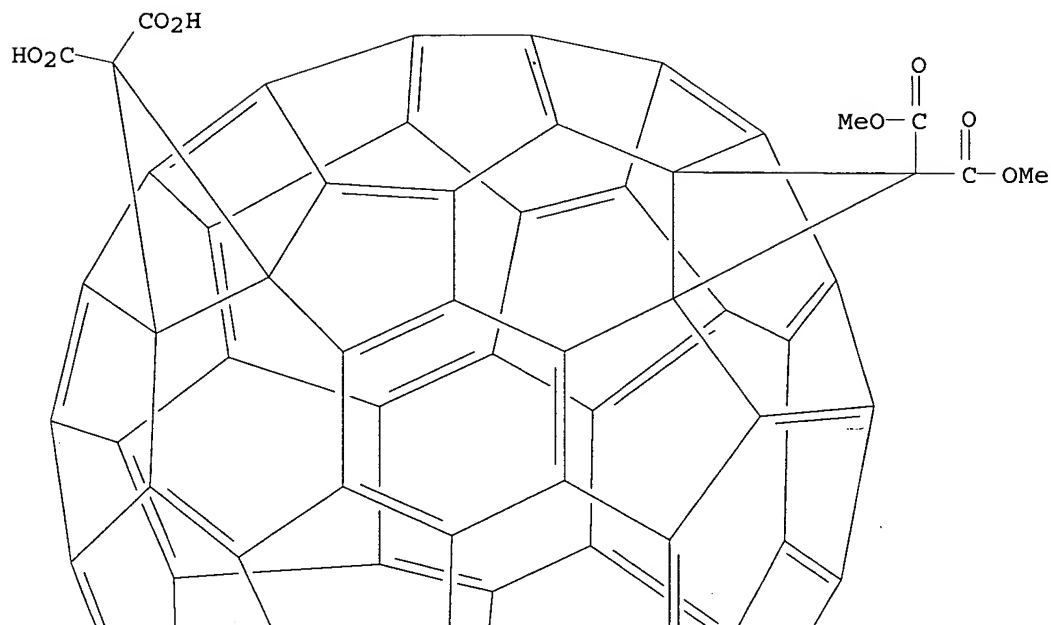
— OBU-t

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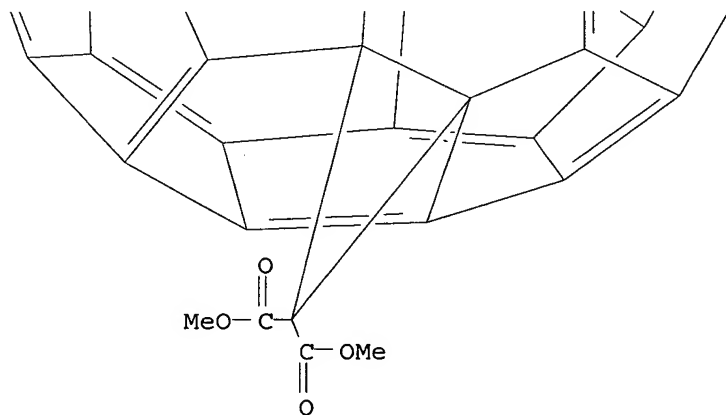


RN 660836-45-3 CAPLUS
CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40] [5,6] fullerene-C60-Ih-
3',3'',3''',3'''-hexacarboxylic acid, 3'',3''',3''',3'''-tetramethyl
ester (9CI) (CA INDEX NAME)

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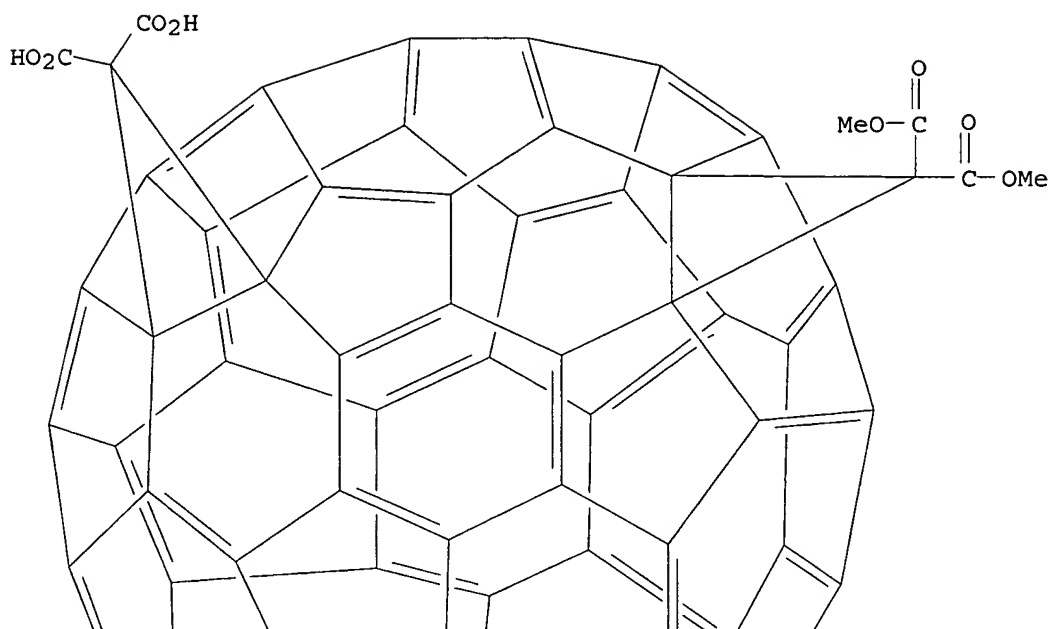


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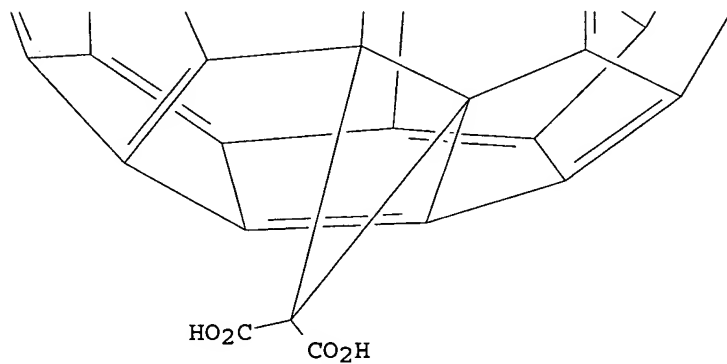


RN 660836-49-7 CAPLUS
CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-1h-
3',3'',3''',3''',3''',3'''-hexacarboxylic acid, 3''',3'''-dimethyl ester
(9CI) (CA INDEX NAME)

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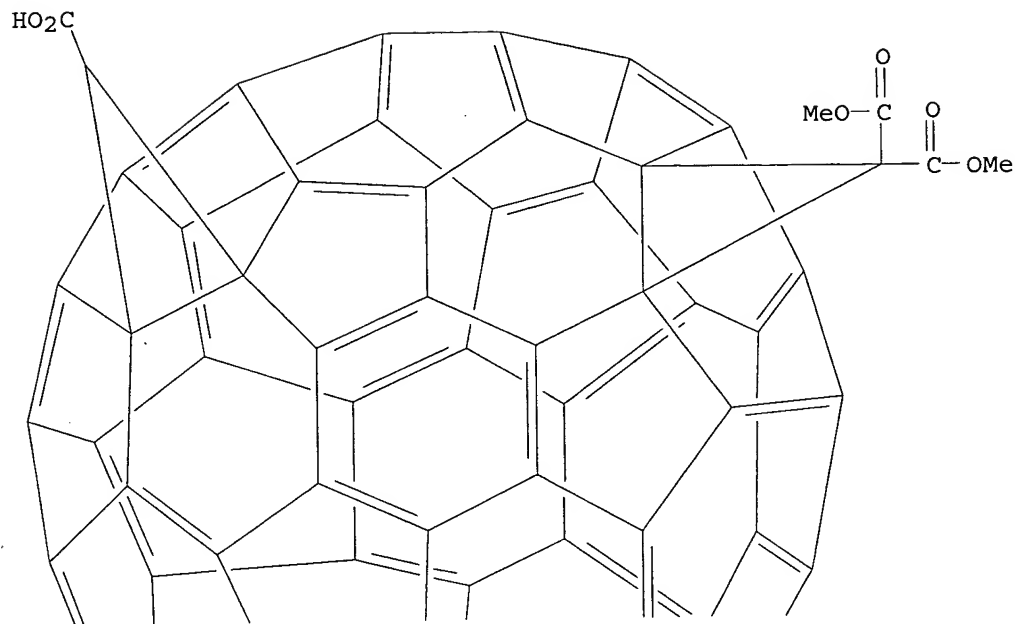


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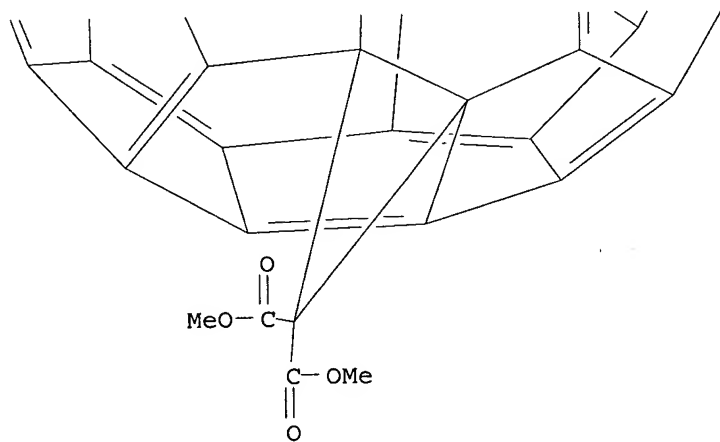


RN 660836-53-3 CAPLUS
CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-
3',3'',3''',3''',3''''-pentacarboxylic acid, 3'',3''',3''',3''''-tetramethyl
ester (9CI) (CA INDEX NAME)

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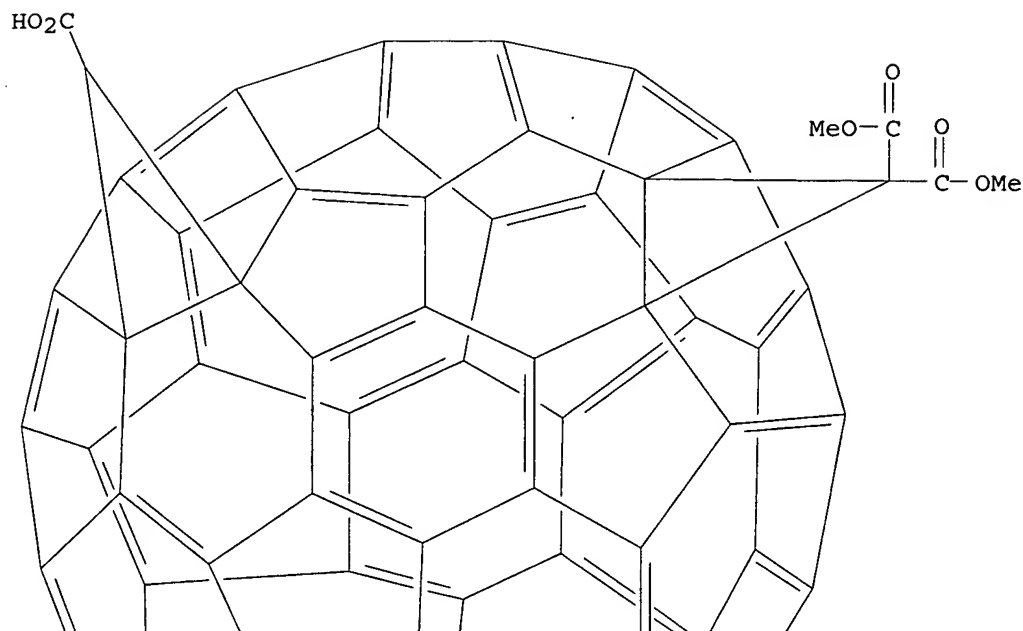


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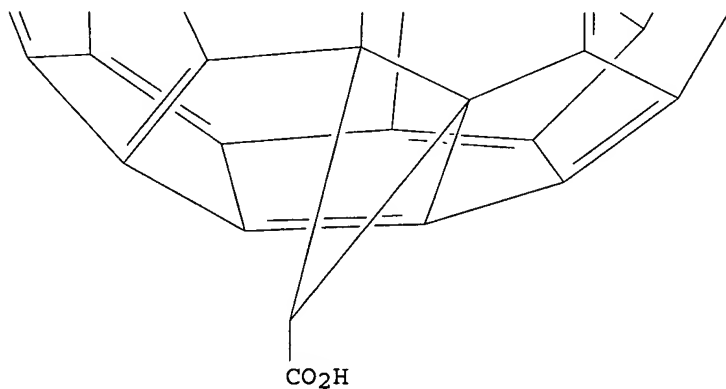


RN 660836-56-6 CAPLUS
CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40] [5,6]fullerene-C60-1h-
3',3'',3''',3''''-tetracarboxylic acid, 3''',3''''-dimethyl ester (9CI) (CA
(INDEX NAME)

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L83 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 2
ACCESSION NUMBER: 2003:678517 CAPLUS
DOCUMENT NUMBER: 139:191480
TITLE: **Carboxyfullerenes** and use as superoxide
dismutase mimetics and in increasing lifespan
INVENTOR(S): Dugan, Laura L.; Lovett, Eva G.; Quick, Kevin L.;
Hardt, Joshua I.
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 19 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003162837	A1	20030828	US 2002-83283	20020223
WO 2003072802	A2	20030904	WO 2003-US5332	20030220
WO 2003072802	A3	20040122		
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RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
EP 1476150	A2	20041117	EP 2003-709252	20030220
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US 2004034100	A1	20040219	US 2003-373425	20030224
PRIORITY APPLN. INFO.:			US 2002-83283	A1 20020223
			WO 2003-US5332	W 20030220

ED Entered STN: 29 Aug 2003

AB The invention provides a method for increasing a metazoan's **lifespan**, comprising administering a carboxylated derivative of a C 60 fullerene. The invention also provides a process for extending a metazoan's **lifespan** by administering a superoxide dismutase mimetic, as well as a composition comprising a superoxide dismutase mimetic. The invention further provides a pharmaceutical composition comprising **carboxyfullerenes** having x pairs of adjacent carbon atoms bonded to two carbons of the C 60 sphere wherein the adjacent carbon atom is further bonded to two groups of the general formula -COOH and -R, wherein R is independently selected from the group consisting of -COOH and -H, and wherein $x \geq 1$. A further embodiment is a non-metal containing composition which can catalytically eliminate two biol. reactive species. Another embodiment is a method of enhancing elimination of reactive oxygen species in eukaryotic cells by contacting cells with a superoxide dismutase mimetic.

IT **583027-48-9P 583027-49-0P**
 RL: BSU (Biological study, unclassified); CPS (Chemical process); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation); PROC (Process)
 (carboxyfullerenes and use as superoxide dismutase mimetics and in increasing lifespan)

RN **583027-48-9 CAPLUS**

CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-3',3'',3''',3'''-pentacarboxylic acid, (1R,3'''S,9S,16S,17R,21S,40R)-rel-(9CI) (CA INDEX NAME)

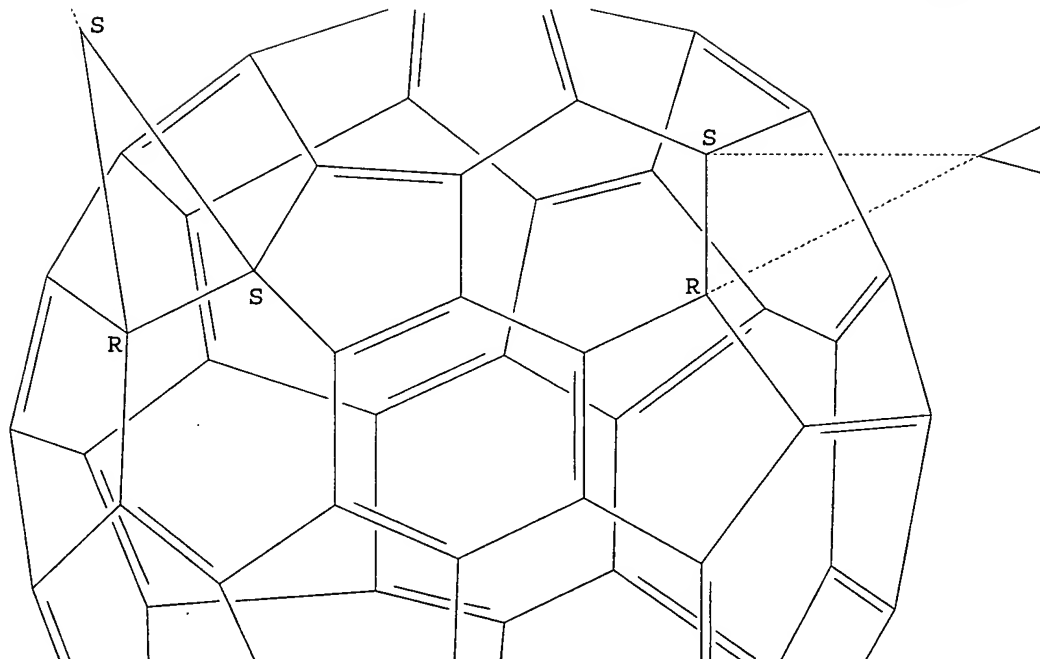
Relative stereochemistry.

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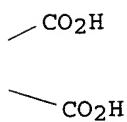
HO₂C



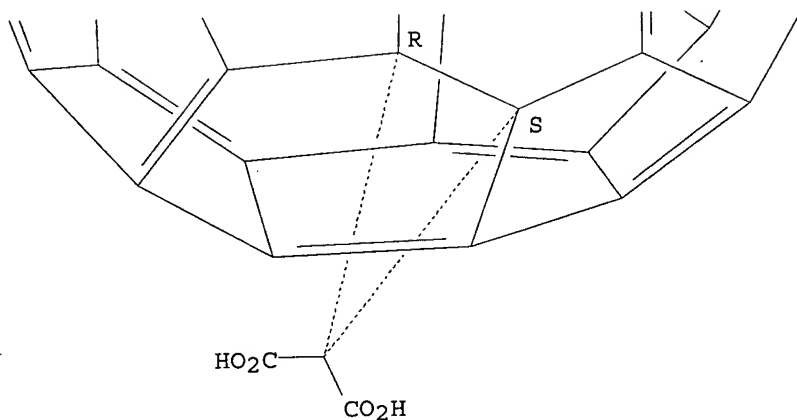
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RN 583027-49-0 CAPLUS

CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-1h-
3',3',3'',3'',3'''-pentacarboxylic acid, (1R,3'''R,9S,16S,17R,21S,40R)-rel-
(9CI) (CA INDEX NAME)

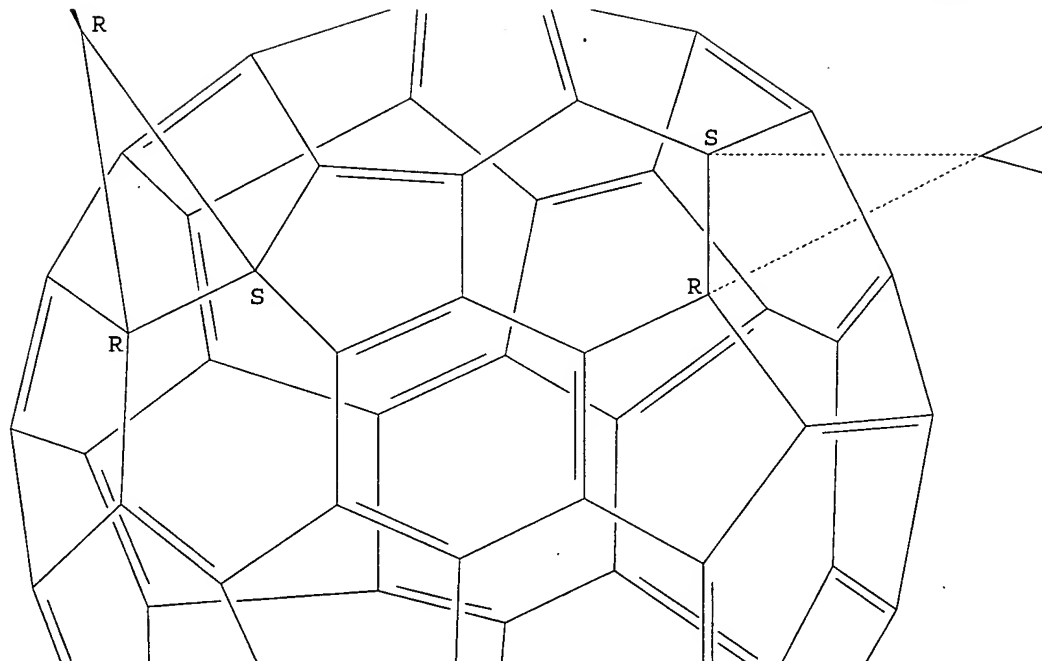
Relative stereochemistry.

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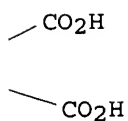
HO₂C



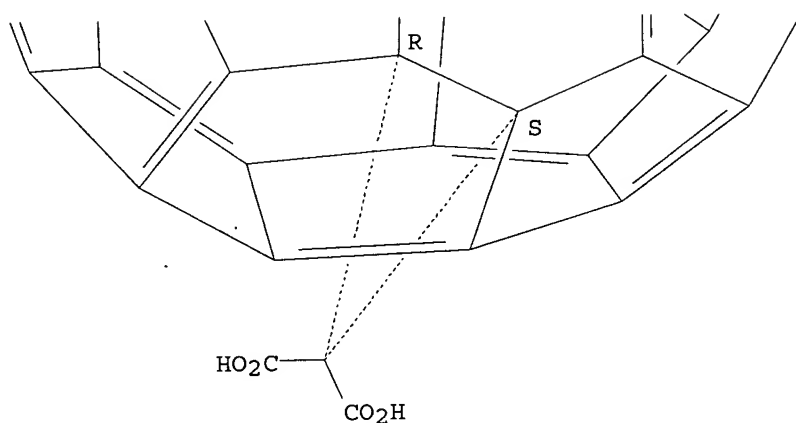
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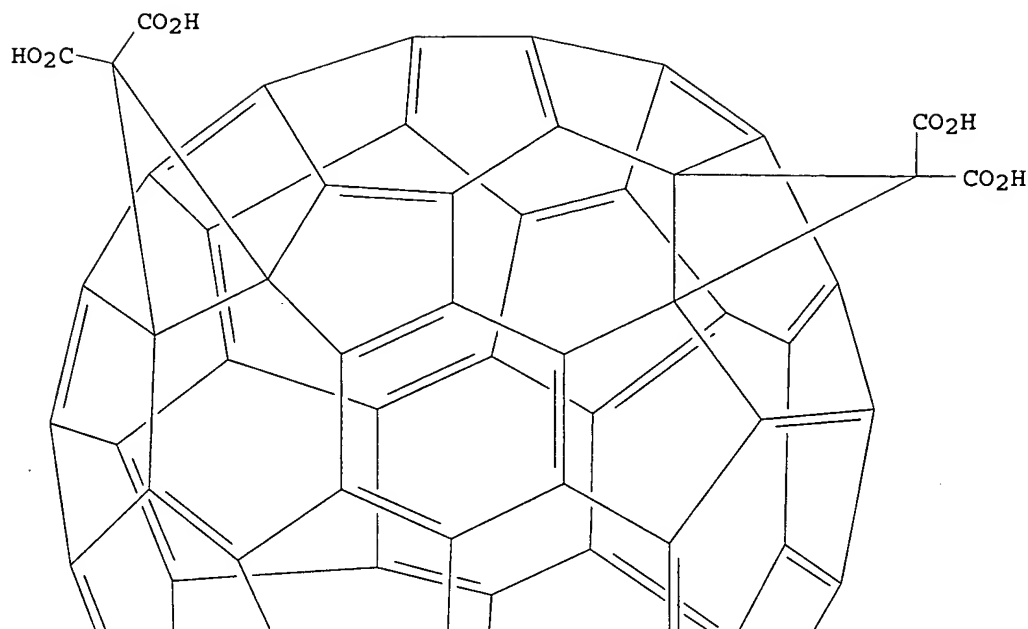


IT 159745-95-6P
 RL: CPS (Chemical process); PAC (Pharmacological activity); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); PROC (Process); USES (Uses)
 (carboxyfullerenes and use as superoxide dismutase mimetics and in increasing lifespan)

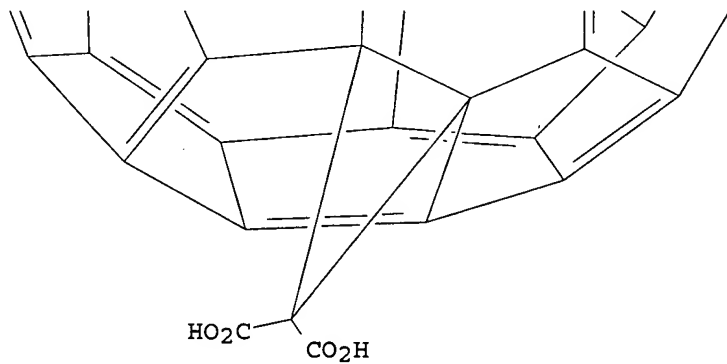
RN 159745-95-6 CAPLUS

CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-3',3',3'',3'',3''',3'''-hexacarboxylic acid (9CI) (CA INDEX NAME)

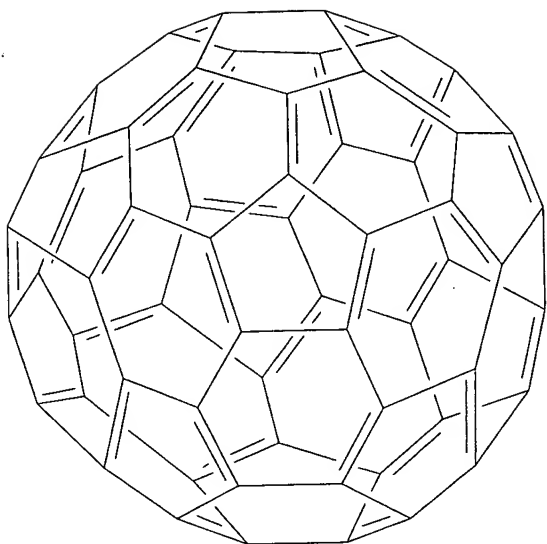
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IT 99685-96-8D, C₆₀ Fullerene, **carboxy** derivs.
RL: PAC (Pharmacological activity); THU (Therapeutic use); BIOL
(Biological study); USES (Uses)
(**carboxyfullerenes** and use as superoxide dismutase mimetics
and in increasing **lifespan**)
RN 99685-96-8 CAPLUS
CN [5,6]Fullerene-C₆₀-1h (9CI) (CA INDEX NAME)



IT 583027-50-3P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
(Reactant or reagent)

(**carboxyfullerenes** and use as superoxide dismutase mimetics
and in increasing **lifespan**)

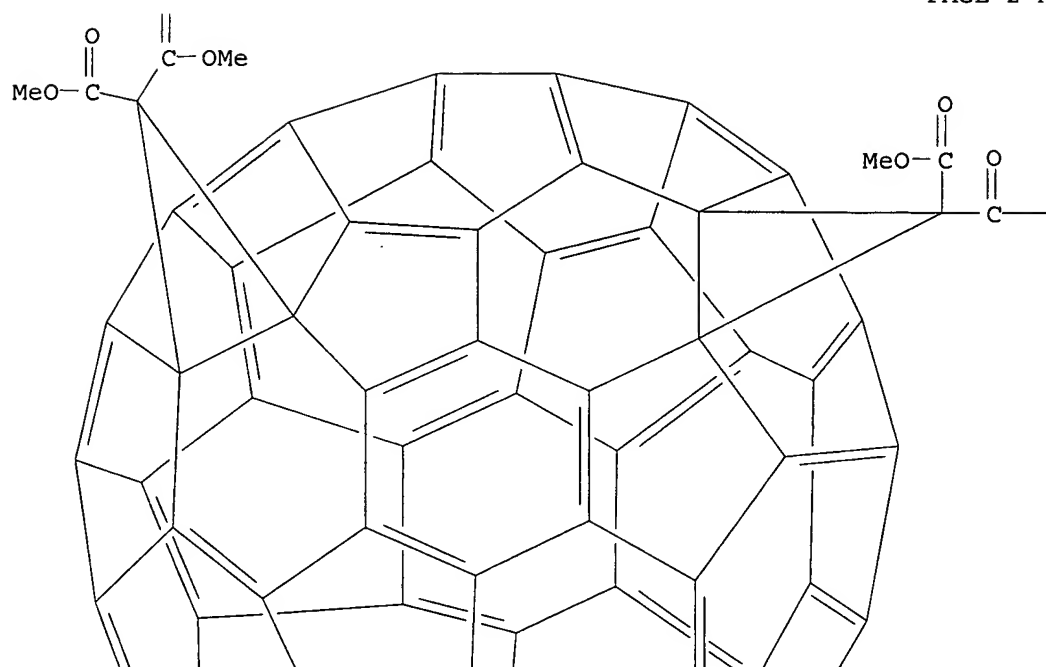
RN 583027-50-3 CAPLUS

CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-
3',3',3'',3'',3''',3'''-hexacarboxylic acid, hexamethyl ester (9CI) (CA
INDEX NAME)

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0

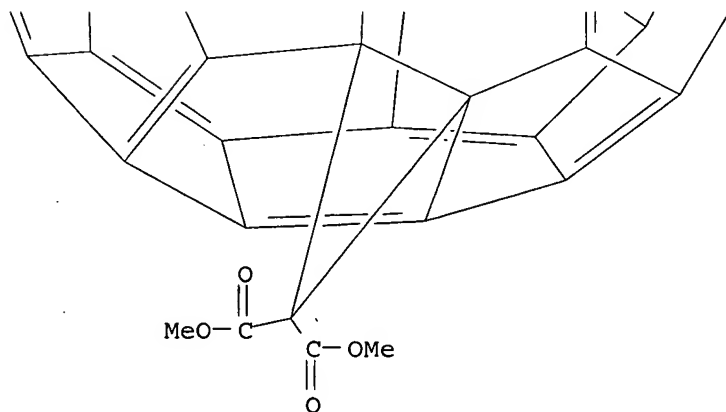
PAGE 2-A



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PAGE 3-A



L83 ANSWER 3 OF 8 USPATFULL on STN

ACCESSION NUMBER: 2003:166084 USPATFULL

TITLE: Antibodies specific for nanotubes and related methods
and compositionsINVENTOR(S): Erlanger, Bernard F., Whitestone, NY, UNITED STATES
Sheetz, Michael, Leonia, NJ, UNITED STATES
Brus, Louis, Hastings, NY, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003113940	A1	20030619
APPLICATION INFO.:	US 2002-197080	A1	20020716 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2001-305929P	20010716 (60)
	US 2002-371023P	20020408 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	John P. White, Cooper and Dunham LLP, 23rd Floor, 1185 Avenue of the Americas, New York, NY, 10036	
NUMBER OF CLAIMS:	30	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	37 Drawing Page(s)	
LINE COUNT:	2977	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB This invention provides two compositions. The first composition comprises a nanotube and at least one anti-nanotube antibody, wherein the anti-nanotube antibody is bound to the nanotube. The second composition comprises a fullerene and at least one anti-fullerene antibody, wherein the anti-fullerene antibody is bound to the fullerene. Finally, this invention provides methods and kits relating to the antibody and compositions of matter.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

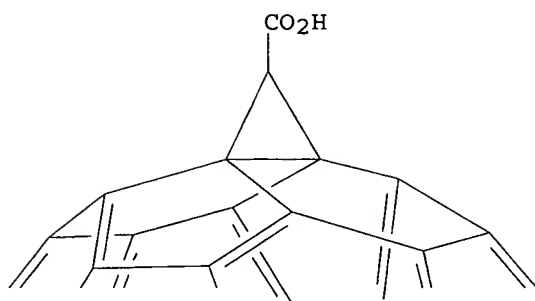
IT 155116-19-1

(monoclonal antibody specific to fullerene nanotubes for detection and immobilization of nanotubes)

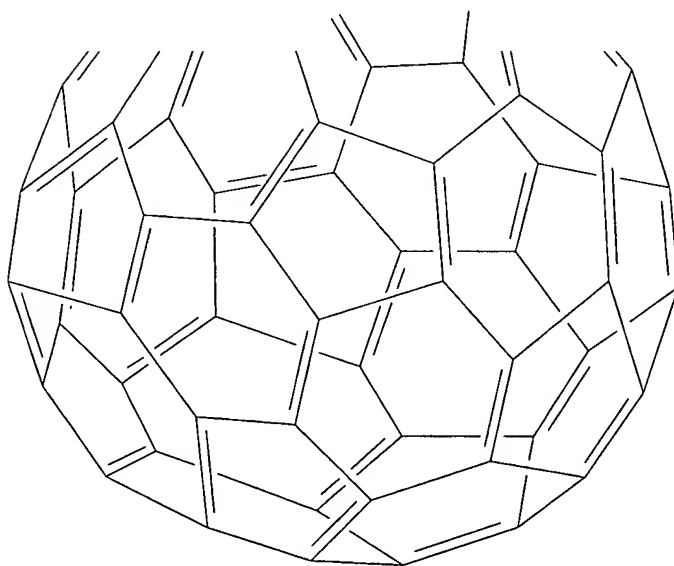
RN 155116-19-1 USPATFULL

CN 3'H-Cyclopropa[1,9][5,6]fullerene-C60-1h-3'-carboxylic acid (9CI) (CA
INDEX NAME)

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L83 ANSWER 4 OF 8 USPATFULL on STN

ACCESSION NUMBER: 2003:32040 USPATFULL

TITLE: Assay for toxin induced neuronal degeneration and viability in *C. elegans*INVENTOR(S): Blakely, Randy D., Brentwood, TN, UNITED STATES
Nass, Richard, Nashville, TN, UNITED STATES
Miller, David, Brentwood, TN, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003023994	A1	20030130
APPLICATION INFO.:	US 2001-888233	A1	20010622 (9)
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	APPLICATION		
LEGAL REPRESENTATIVE:	Steven L. Highlander, Fulbright & Jaworski L.L.P., Suite 2400, 600 Congress Avenue, Austin, TX, 78701		
NUMBER OF CLAIMS:	100		
EXEMPLARY CLAIM:	1		
NUMBER OF DRAWINGS:	6 Drawing Page(s)		
LINE COUNT:	2517		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Provided are in vivo screening methods to detect and identify substances that affect neuronal viability, and/or prevent neurodegeneration, and/or confer neuroprotective effects. The screening methods utilize recombinant *C. elegans* expressing a detectable marker in neuronal sub-groups and the use of neurotoxins specific to specific neuronal cells. Also provided are methods for identifying modulators of neurotransmitter transporters such as the dopamine transporter. Therefore, the invention provides methods for identifying substances that can be used in the prevention and therapy of neurodegenerative diseases.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L83 ANSWER 5 OF 8 USPATFULL on STN

ACCESSION NUMBER: 2003:190688 USPATFULL
 TITLE: Antibodies specific for fullerenes
 INVENTOR(S): Erlanger, Bernard F., Whitestone, NY, United States
 Chen, Bi-Xing, Palisades Park, NJ, United States
 PATENT ASSIGNEE(S): The Trustees of Columbia University in the City of New York, New York, NY, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6593137	B1	20030715
APPLICATION INFO.:	US 1999-386658		19990831 (9)
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	GRANTED		
PRIMARY EXAMINER:	Chin, Christopher L.		
ASSISTANT EXAMINER:	Grun, James L.		
LEGAL REPRESENTATIVE:	White, John P., Cooper & Dunham LLP		
NUMBER OF CLAIMS:	7		
EXEMPLARY CLAIM:	1,2		
NUMBER OF DRAWINGS:	24 Drawing Figure(s); 23 Drawing Page(s)		
LINE COUNT:	2607		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB This invention provides a hybridoma produced by the fusion of a mouse antibody-producing cell and a mouse myeloma which is designated 1-10F-8A and deposited with the ATCC under Accession Number PTA-279, said hybridoma producing a monoclonal antibody which binds to fullerene C60. This invention provides a mouse monoclonal antibody specific for a fullerene-C60 and produced by the mouse monoclonal antibody-producing hybridoma designated 1-10F-8A. The invention provides the amino acid and encoding nucleic acid sequences of the heavy and light chains of the 1-10F-8A monoclonal antibody. This invention also provides methods of determining a serum concentration of a fullerene in a subject and of purifying a fullerene from a sample.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L83 ANSWER 6 OF 8 USPATFULL on STN

ACCESSION NUMBER: 2002:185272 USPATFULL

TITLE: Fullerene pharmaceutical compositions for preventing or treating disorders

INVENTOR(S): Lei, Huan-Yao, Taipei, TAIWAN, PROVINCE OF CHINA
Chou, Chen-Kung, Taipei, TAIWAN, PROVINCE OF CHINA
Luh, Tien-Yau, Taipei, TAIWAN, PROVINCE OF CHINA

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2002098180	A1	20020725
	US 6777445	B2	20040817
APPLICATION INFO.:	US 2001-981951	A1	20011017 (9)
RELATED APPLN. INFO.:	Continuation of Ser. No. US 2000-645682, filed on 24 Aug 2000, ABANDONED		

	NUMBER	DATE
PRIORITY INFORMATION:	TW 2000-89105485	20000324
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	Sonnenschein Nath & Rosenthal, Sears Tower, Wacker Drive Station, P.O. Box #061080, Chicago, IL, 60606	
NUMBER OF CLAIMS:	20	
EXEMPLARY CLAIM:	1	
NUMBER OF DRAWINGS:	13 Drawing Page(s)	
LINE COUNT:	874	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention relates to a method for treating a disease, comprising administering a therapeutically effective amount of a pharmaceutical composition comprising a fullerene. The diseases treated comprise bacterial and viral diseases such as those cause by Gram positive and Gram negative bacteria, Dengue 2 virus and viral encephalitis. The fullerene is administered in vivo in an amount of about 0.001 to about 100 mg/kg of body weight of the subject.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

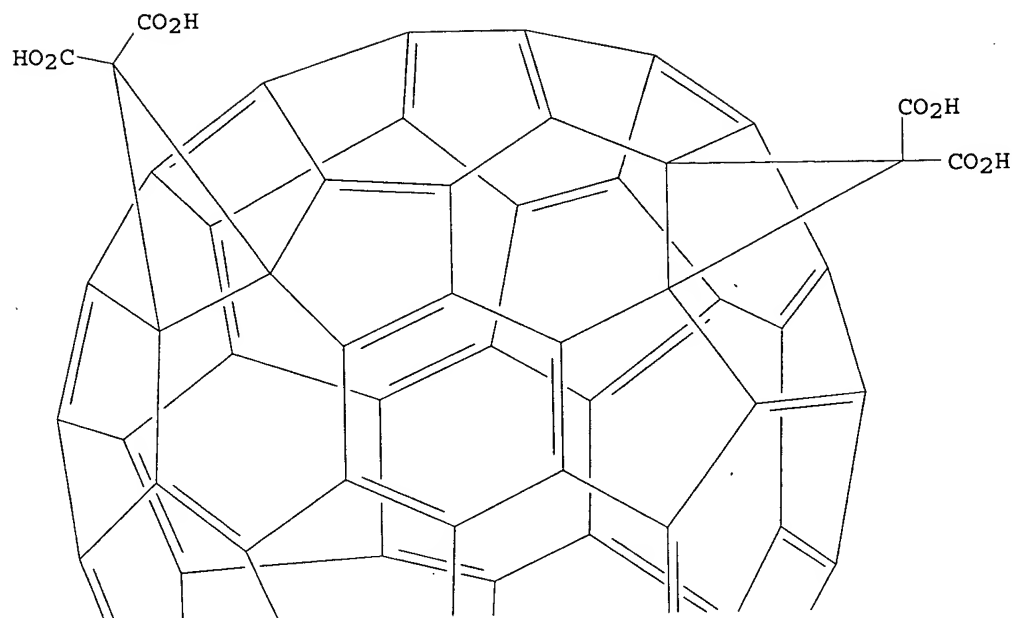
IT 159745-95-6

(fullerene treating bacterial and viral disorders)

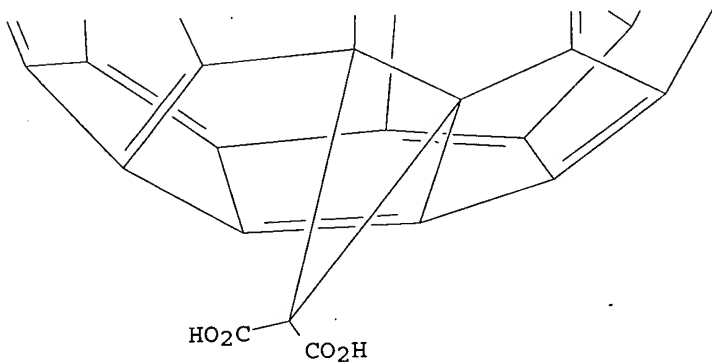
RN 159745-95-6 USPATFULL

CN 3'H,3''H,3'''H-Tricyclopropa[1,9:16,17:21,40][5,6]fullerene-C60-Ih-3',3',3'',3'',3''',3'''-hexacarboxylic acid (9CI) (CA INDEX NAME)

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L83 ANSWER 7 OF 8 MEDLINE on STN
ACCESSION NUMBER: 2004008039 MEDLINE
DOCUMENT NUMBER: PubMed ID: 14514958
TITLE: Pulmonary toxicity of single-wall carbon nanotubes in mice
7 and 90 days after intratracheal instillation.
COMMENT: Comment in: Toxicol Sci. 2004 Jan;77(1):3-5. PubMed ID:
14756123
AUTHOR: Lam Chiu-Wing; James John T; McCluskey Richard; Hunter
Robert L
CORPORATE SOURCE: Space and Life Sciences, NASA Johnson Space Center,
Houston, Texas 77058, USA.. Chiu-wing.Lam@jsc.nasa.gov

SOURCE: Toxicological sciences : an official journal of the Society of Toxicology, (2004 Jan) 77 (1) 126-34.
Journal code: 9805461. ISSN: 1096-6080.

PUB. COUNTRY: United States

DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)

LANGUAGE: English

FILE SEGMENT: Priority Journals

ENTRY MONTH: 200408

ENTRY DATE: Entered STN: 20040106
Last Updated on STN: 20040901
Entered Medline: 20040831

ABSTRACT:

Nanomaterials are part of an industrial revolution to develop lightweight but strong materials for a variety of purposes. Single-wall carbon nanotubes are an important member of this class of materials. They structurally resemble rolled-up graphite sheets, usually with one end capped; individually they are about 1 nm in diameter and several microns long, but they often pack tightly together to form rods or ropes of microscopic sizes. Carbon nanotubes possess unique electrical, mechanical, and thermal properties and have many potential applications in the electronics, computer, and aerospace industries. Unprocessed nanotubes are very light and could become airborne and potentially reach the lungs. Because the toxicity of nanotubes in the lung is not known, their pulmonary toxicity was investigated. The three products studied were made by different methods and contained different types and amounts of residual catalytic metals. Mice were intratracheally instilled with 0, 0.1, or 0.5 mg of carbon nanotubes, a carbon black negative control, or a quartz positive control and euthanized 7 d or 90 d after the single treatment for histopathological study of the lungs. All nanotube products induced dose-dependent epithelioid granulomas and, in some cases, interstitial inflammation in the animals of the 7-d groups. These lesions persisted and were more pronounced in the 90-d groups; the lungs of some animals also revealed peribronchial inflammation and necrosis that had extended into the alveolar septa. The lungs of mice treated with carbon black were normal, whereas those treated with high-dose quartz revealed mild to moderate inflammation. These results show that, for the test conditions described here and on an equal-weight basis, if carbon nanotubes reach the lungs, they are much more toxic than carbon black and can be more toxic than quartz, which is considered a serious occupational health hazard in chronic inhalation exposures.

CONTROLLED TERM: Check Tags: Male; Support, U.S. Gov't, Non-P.H.S.
Acute Toxicity Tests
Animals
Dose-Response Relationship, Drug
*Granuloma, Foreign-Body: CI, chemically induced
Granuloma, Foreign-Body: PA, pathology
*Granuloma, Respiratory Tract: CI, chemically induced
Granuloma, Respiratory Tract: PA, pathology
Inhalation Exposure
Intubation, Intratracheal
Longevity: DE, drug effects
*Lung: DE, drug effects
Lung: PA, pathology
*Lung Diseases: CI, chemically induced
Lung Diseases: PA, pathology
Mice
Mice, Inbred Strains
*Nanotubes, Carbon: AE, adverse effects
Specific Pathogen-Free Organisms

CHEMICAL NAME: 0 (Nanotubes, Carbon)

L83 ANSWER 8 OF 8 MEDLINE on STN
ACCESSION NUMBER: 2004008040 MEDLINE

DOCUMENT NUMBER: PubMed ID: 14514968
TITLE: Comparative pulmonary toxicity assessment of single-wall carbon nanotubes in rats.
COMMENT: Comment in: Toxicol Sci. 2004 Jan;77(1):3-5. PubMed ID: 14756123
AUTHOR: Warheit D B; Laurence B R; Reed K L; Roach D H; Reynolds G A M; Webb T R
CORPORATE SOURCE: DuPont Haskell Laboratory for Health and Environmental Sciences, Newark, Delaware 19714, USA.. david.b.warheit@usa.dupont.com
SOURCE: Toxicological sciences : an official journal of the Society of Toxicology, (2004 Jan) 77 (1) 117-25. Journal code: 9805461. ISSN: 1096-6080.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200408
ENTRY DATE: Entered STN: 20040106
Last Updated on STN: 20040901
Entered Medline: 20040831

ABSTRACT:

The aim of this study was to evaluate the acute lung toxicity of intratracheally instilled single-wall carbon nanotubes (SWCNT) in rats. The lungs of rats were instilled either with 1 or 5 mg/kg of the following control or particle types: (1) SWCNT, (2) quartz particles (positive control), (3) carbonyl iron particles (negative control), (4) phosphate-buffered saline (PBS) + 1% Tween 80, or (5) graphite particles (lung tissue studies only). Following exposures, the lungs of PBS and particle-exposed rats were assessed using bronchoalveolar lavage (BAL) fluid biomarkers and cell proliferation methods, and by histopathological evaluation of lung tissue at 24 h, 1 week, 1 month, and 3 months postinstillation. Exposures to high-dose (5 mg/kg) SWCNT produced mortality in 15% of the SWCNT-instilled rats within 24 h postinstillation. This mortality resulted from mechanical blockage of the upper airways by the instillate and was not due to inherent pulmonary toxicity of the instilled SWCNT particulate. Exposures to quartz particles produced significant increases versus controls in pulmonary inflammation, cytotoxicity, and lung cell parenchymal cell proliferation indices. Exposures to SWCNT produced transient inflammatory and cell injury effects. Results from the lung histopathology component of the study indicated that pulmonary exposures to quartz particles (5 mg/kg) produced dose-dependent inflammatory responses, concomitant with foamy alveolar macrophage accumulation and lung tissue thickening at the sites of normal particle deposition. Pulmonary exposures to carbonyl iron or graphite particles produced no significant adverse effects. Pulmonary exposures to SWCNT in rats produced a non-dose-dependent series of multifocal granulomas, which were evidence of a foreign tissue body reaction and were nonuniform in distribution and not progressive beyond 1 month postexposure (pe). The observation of SWCNT-induced multifocal granulomas is inconsistent with the following: (1) lack of lung toxicity by assessing lavage parameters, (2) lack of lung toxicity by measuring cell proliferation parameters, (3) an apparent lack of a dose response relationship, (4) nonuniform distribution of lesions, (5) the paradigm of dust-related lung toxicity effects, (6) possible regression of effects over time. In addition, the results of two recent exposure assessment studies indicate very low aerosol SWCNT exposures at the workplace. Thus, the physiological relevance of these findings should ultimately be determined by conducting an inhalation toxicity study.

CONTROLLED TERM: Check Tags: Male; Support, Non-U.S. Gov't
Acute Toxicity Tests
Alkaline Phosphatase: AN, analysis
Animals
Bronchoalveolar Lavage Fluid: CH, chemistry

Bronchoalveolar Lavage Fluid: CY, cytology
Cell Division: DE, drug effects
Dose-Response Relationship, Drug
*Granuloma, Foreign-Body: CI, chemically induced
Granuloma, Foreign-Body: PA, pathology
*Granuloma, Respiratory Tract: CI, chemically induced
Granuloma, Respiratory Tract: PA, pathology
Inhalation Exposure
Intubation, Intratracheal
L-Lactate Dehydrogenase: AN, analysis
 Longevity: DE, drug effects
*Lung: DE, drug effects
Lung: PA, pathology
*Lung Diseases: CI, chemically induced
Lung Diseases: PA, pathology
 ***Nanotubes, Carbon: AE, adverse effects**
Proteins: AN, analysis
Rats
Rats, Sprague-Dawley
CHEMICAL NAME: 0 (Nanotubes, Carbon); 0 (Proteins); EC 1.1.1.27 (L-Lactate
Dehydrogenase); EC 3.1.3.1 (Alkaline Phosphatase)

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